Series 2800 Peeler/Washer
Parts and Service Manual

Vanmark Series 2800 Peeler/Washers are designed and built to provide long years of service with minimal maintenance. Operation is simple and easy to learn. However, it is important that operators be properly trained and that they use care to prevent injury to themselves and damage to the equipment.

This manual is provided with your Series 2800 Peeler/Washer as a guide for operation and as a maintenance aid. Please read and understand this manual before attempting to install, operate, service or repair your machine. Always shut-off and lock-out electrical power before performing maintenance. Drawings, parts and instructions are identified as right or left when facing the inlet of the machine or the direction of product flow. Parts, drawings, photographs and text are subject to change.

If any items are unclear or difficulties are encountered, please contact Vanmark Corporation at 1-800-523-6261 or (Vanmarkcorp.com). Vanmark does not assume any responsibility for work on the equipment by unauthorized personnel.

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1.1000 DATA SHEET

SERIES 2800 PEELER/WASHER

Model No. _____ Serial No. _____

Purchaser

Name: _____

Address: _____

_____

_____

_____

Application_____

Standard Equipment

All Series 2800 Peeler/Washers are equipped with the following:

• Tachometer System

Options

___ Tumbling Unit

• Drive

___Hydraulic

___Mechanical

• Discharge

___Auger

___Gate

• Lubrication

___Automatic

___Manual

• Line Operation

___ Continuous

___ Intermittent

PLEASE REFER TO THIS INFORMATION IN USING YOUR MANUAL. IN ANY COMMUNICATIONS TO VANMARK CORPORATION FOR PARTS OR SERVICE, USE THIS MODEL NUMBER AND SERIAL NUMBER.

1.2000 SPECIFICATIONS

1.2100 SERIES 2800 PEELER/WASHER

Equipment Weight ..... 4900 Lbs. (2225 Kg.)

Overall Dimensions
- Length ..... 129.65" (2755.9 mm)
- Width ..... 64.00" (1625.6 mm)
- Height ..... 69.12" (1755.09mm)

Twelve (12) or Sixteen (16) Motor Hydraulic Drive System

Roller Speed. ..... Up to 550 RPM
Motor ..... 30 HP,230/460 Volts, 3 Phase 60 Cycle, 80/40 Amps
Reservoir ..... 65 Gal. (247.2 Liter)
Pressure Setting-w/3.6 cu in motors ..... 1000 PSI (70.3 kg/cm^2)
Fluid Temperature Range ..... 110° - 130°F (46° - 54°C)
Cooling Water
- Flow ..... 26 GPM
- Temperature Range ..... 50° - 60° F (21° - 25° C)
- Two (2) Connections ..... 0.75" (Nominal) NPT

Electrical Requirement (Control) ..... 120 Volts, Single Phase, 60/50 Cycle

Spray Bar

Water Flow
- @ 40 PS ..... 26.8 PM (101.44 Liter/Min) x Two (2) Spray Bars = 53.6 GPM (202.88 Liter/Min.)
- @ 60 PSI ..... 32.6 GPM (123.40 Liter/Min) x Two (2) Spray Bars = 65.2 GPM (246.80 Liter/Min.)

Water Connection ..... (2) 1.00" (Nominal) NPT
Electrical Requirement (Solenoid Valve) ..... 120 Volts, Single Phase, 60/50 Cycle

Automatic Lubrication

Air Pressure ..... 92 PSI (6.45 kg/cm^2)
Air Connection ..... 0.125" (Nominal) NPT
Electrical Requirement (Controller) ..... 120 Volts, Single Phase, 60/50 Cycle

1.2000 SPECIFICATIONS

1.2201 HYDRAULIC FLUID

Use premium quality hydraulic fluid with 150 to 250 SUS (32cSt to 54cSt) viscosity at normal operating temperatures. Minimum operating viscosity is 100 SUS (21cSt). Maximum operating viscosity is 1000 SUS (216cSt). Maximum start-up viscosity should not exceed 4,000 SUS (864cSt). Fluids with zinc complex anti-wear additives are highly recommended.

Under normal conditions of continuous operations, fluid temperatures should not exceed 130°F (54°C). In no instance should the temperature exceed 150°F (71°C).

1.2202 Hydraulic reservoir is filled with Sun Petroleum Products Sunvis 832WR fluid before shipping.

Sunvis 832 WR Fluid Properties

ISO	Grade 32
Viscosity SUS 100°F	.165
Viscosity SUS 210°F	44.3
Viscosity cST 40°C	32.0
Viscosity cST 100°C	5.39
Viscosity Index	101
Flash Point COC	415°F
Pour Point	-25°F
Color	1.0
API Gravity	31.5
Lbs/Gal	7.25

1.2300 LUBRICANTS

1.2301 Grease. Lubrication Engineers, Inc. series "H1" food machinery lubricants are recommended for greasing bearings. "H1" is a USDA authorized lubricant for applications which require a non-toxic, clean lubricant.

Typical physical requirements:

	4023 (Auto)	4025 (Manual)
NLGI Grade Code	0	0
USDA Rating	H1	H1
Work Penetration	375	375
Texture	Smooth	Smooth
Dropping Point, °F (°C)	300 (150)	300 (150)
ASTM D-942 Oxidation; pressure drop in 100 hrs. PSIG	5.0 Max.	5.0 Max.
Color	White	White
Operating Temperature	-15 - 300° F	-15 - 300° F

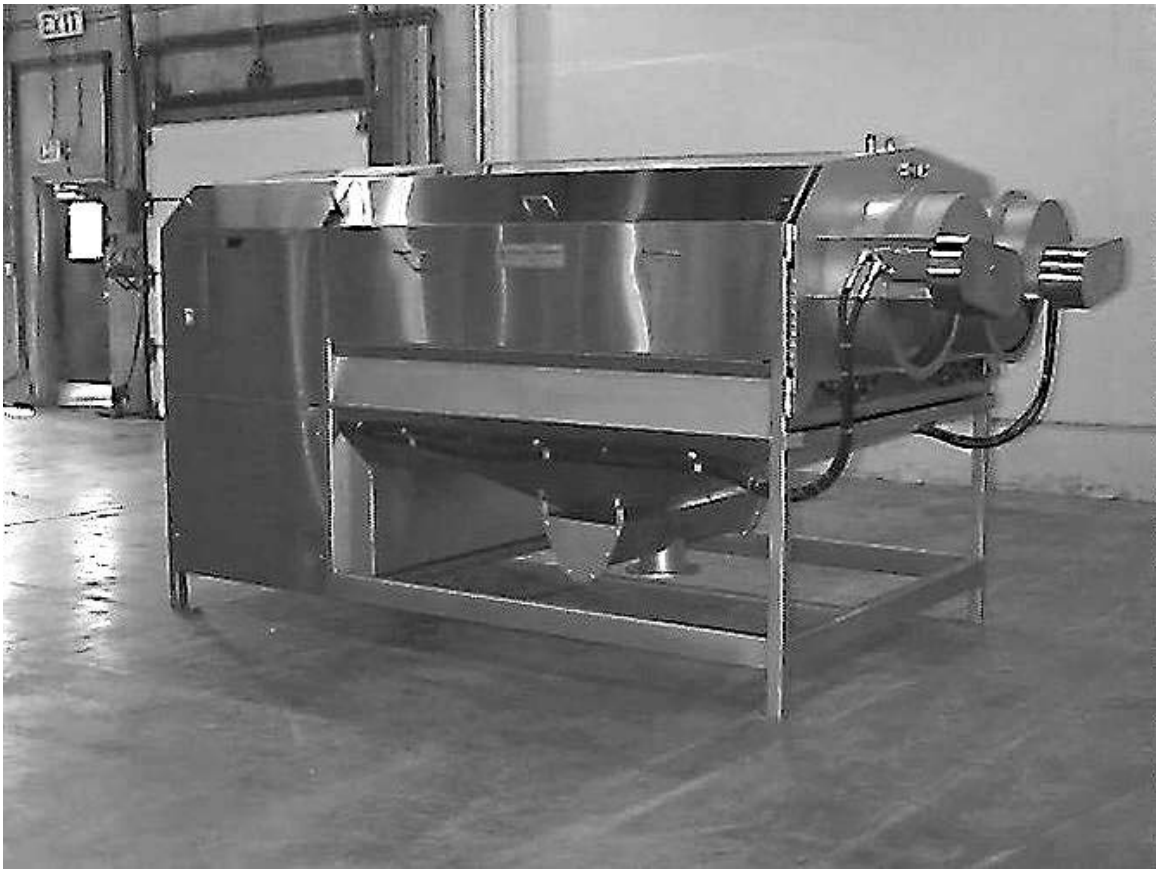
1.2302 Oil

Automatic Lubrication System Air Lubricator

Lubricator oil	SAE #10 Paraffin Base Only
Recommended Lubrication Range	800 SSU Maximum Straight Paraffin base Mineral Oil of Viscosity 100 - 200 SSU at 100° F.

NOTE: Caution is advised in the use of oils containing additives as many agents are not compatible with plastic bowls.

1.3000 MACHINE DESCRIPTION

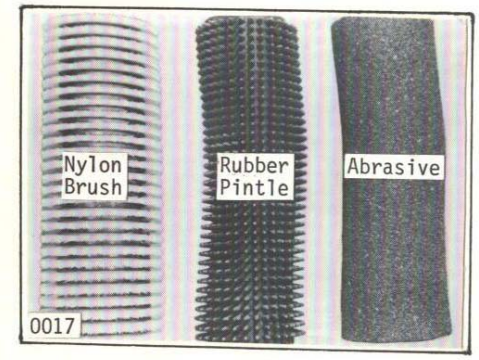


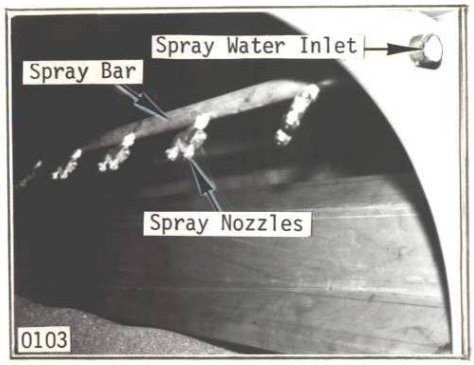
1.3001 Vanmark Peeler/Washers are designed and built to provide long years of service with minimal maintenance. The Series 2800 has twin peeling chambers with individual controls. This design feature allows the running of two different types or grades of product simultaneously.

1.3002 The peelers are constructed of stainless steel making them easy to clean. High quality materials and components are used insuring long term operation with minimal maintenance.

1.3003 Peeling roller bearings in the machine are double row tapered, with both internal and external seals to reduce the possibility of bearing failure from contamination. Lubrication is accomplished with a manual or automatic lubrication system.

1.3004





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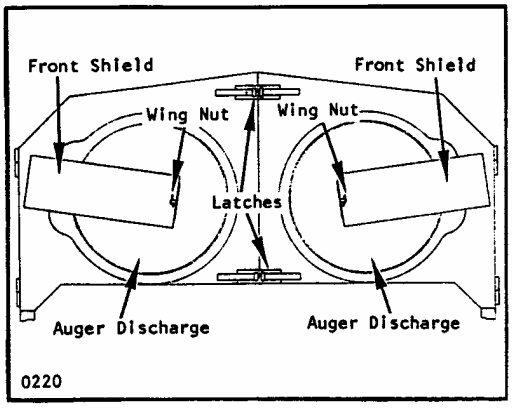
Do not operate without guards in place.

The two (2) peeling chambers consist of six (6) or eight (8) rolls each, with three (3) types of surface coverings. Roller types include: ABRASIVE in many grit sizes, available in Sine - Wave, straight, agitator and lift rolls; NYLON BRUSHES of varied stiffness; and RUBBER PINTLES in straight.

The Sine - Wave double contoured rollers are designed to create a natural tumbling action for consistent peel removal. The Sine-Wave design helps prevent flat spots, even in irregularly shaped vegetables. This means less waste and a clean finished product.

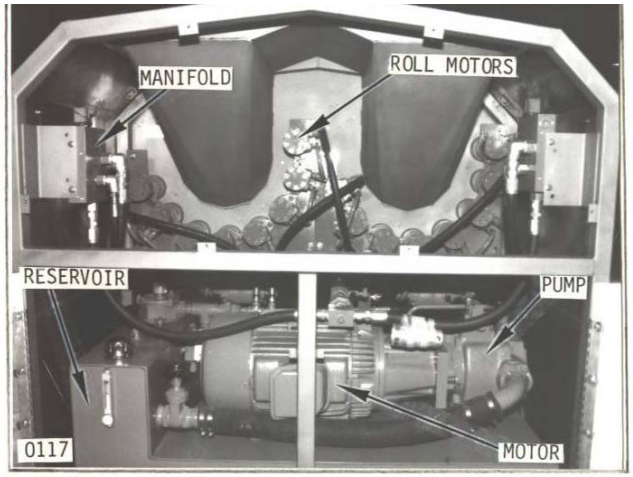
A centralized water wash system is located on the upper side of each peeling chamber. Each water spray bar has nozzles located along its length, providing a constant water spray through the product as it is being processed.

1.3005 The product depth in the peeling beds is controlled at the discharge end of the machine with an auger, controlling the effect of the rollers on the product.



For accessibility to each peeling chamber, the auger discharge is a movable hinged assembly that is easily opened and closed manually. Rotation of the auger is accomplished with a hydraulic motor. The speed of each auger is controlled separately by a hydraulic flow control valve located in the drive compartment.

1.3006 The Series 2800 peeler/washer has a hydraulic drive that is designed with the drive system separate from the peeling chamber to prevent product contamination. The hydraulic drive has a pressure compensated pump driven by a thirty (30) horsepower electric motor. Individual hydraulic motors drive the rolls.



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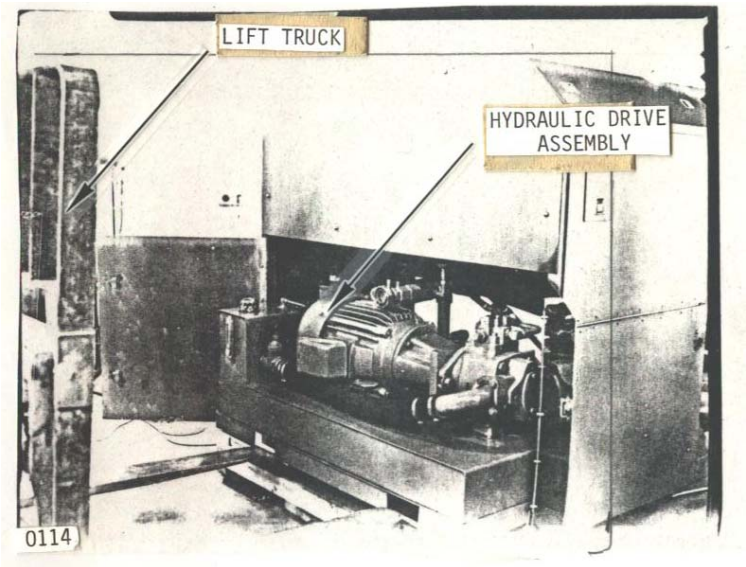
1.3007 Hydraulic drive assembly is made for frame or remote installation. For maintenance accessibility a lift truck may be used to remove it from the frame or remote location.



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2.1000 RECEIVING AND POSITIONING

2.1001 Inspection - Inspect machine for shipping damage and make carrier claims immediately if necessary.

2.1002 Transporting - Machine is shipped on skid that may be towed on level surface by end crossmember of skid. Machine may also be carried on lift truck by extending forks under lowest horizontal tubing of frame. Center of gravity is approximately one - third of overall length from inlet.

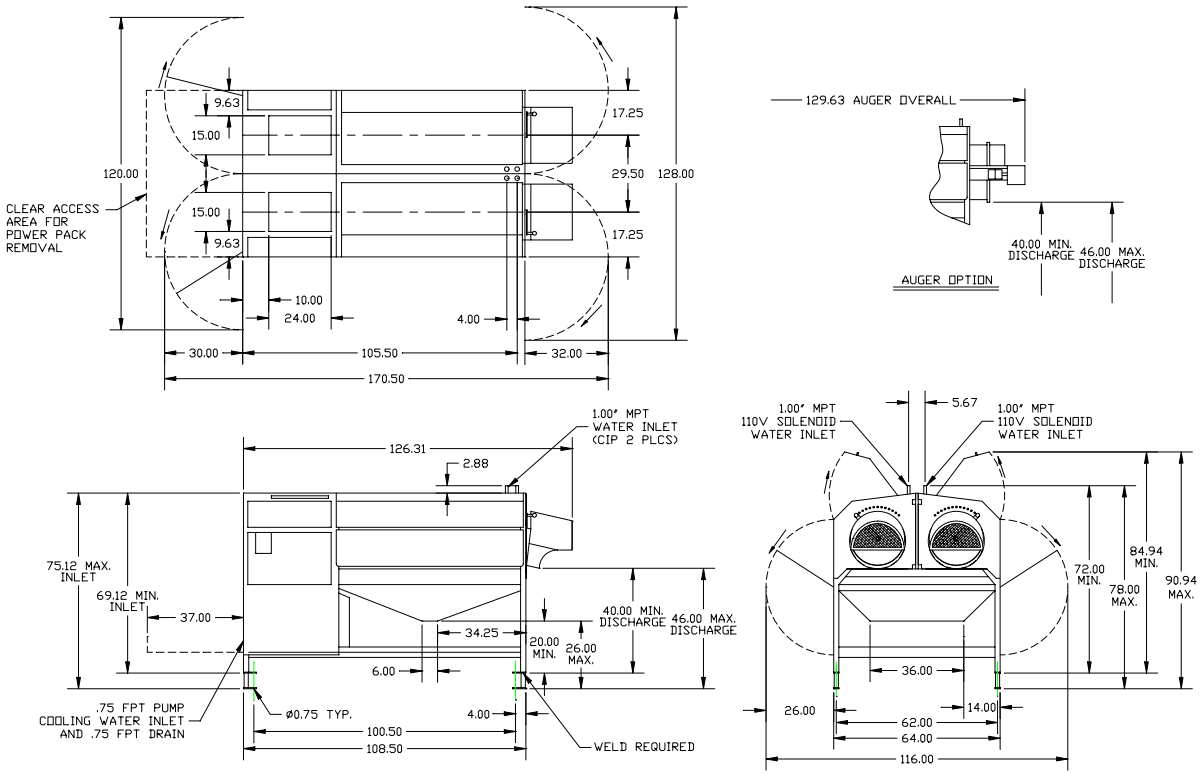
NOTE: If drain pan of machine extends below horizontal, it may be necessary to remove drain pan when using a lift truck.

DO NOT puncture hydraulic reservoir with forks.

If jib crane is used to move machine, use two (2) slings under lowest horizontal tubing of frame. Use spreaders on top of machine to reduce sling pressure against rides of machine.

2.1003 Uncrating - Remove auto lube panel crate and 40 feet of tubing that are attached to skid. Remove four (4) .50" bolts that go through foot pads of frame into skid and lift machine off of skid. Remove any hold - down straps or vertical bracing by cutting and discarding.

2.1004 Locating - Machine is to be located over a waste trench, or other means provided to dispose of water and product waste. Locate machine to allow for adequate clearances to other equipment, access to covers or opening auger discharge and ventilation at drive compartment.



2.1000 RECEIVING AND POSITIONING

2.1005 Leveling - Check that machine is level, shimming under floor pads as required.

NOTE: Machine must be level for proper operation.

2.1006 Locating Auto Lube Panel - Auto lube panel is to be vertically mounted on a wall and requires a space approximately 28.00" wide x 19.00" high x 10.00" deep.

2.1007 Anchoring - Anchor machine to the floor through four (4) .875" diameter holes in hold - down pads of the frame.

NOTE: Floor anchors are not supplied.

2.1008 Stand Mounting - If mounting machine on stand or elevated framework, level machine as previously described and then anchor it by bolting or welding it to stand.

2.1009 Fasteners - Check that all fasteners are tight.

2.1010 Removing Plastic - Peel off any plastic film from sheet metal covers.

2.1011 Cleaning Covers - Use high pressure spray or a cleaning solution with cloth to clean covers.

NOTE: During high pressure cleaning, do not aim steam directly on hydraulic reservoir breather cap, gauges, rubber seals of shaft bearings, or automatic lubrication system control box.

2.2000 UTILITY AND HYDRAULIC CONNECTIONS

2.2001 Scope of Supply - Vanmark does not supply any material or labor for utility connections.

2.2002 Utility Requirements - See specifications Section 1.2000 and schematics section 7.3000 through 7.6000 for utility requirements to size required components.

2.2100 ELECTRICAL - All connections shall be permanent water - tight and shall conform to National and Local electrical codes. When routing cables and conduit, do not interfere with access to machine covers and other moving or removable parts.

2.2101 Electrical Power to Drive - Make connection between drive motor and motor starter in control area. Vanmark additionally recommends an emergency shut - off in an easily accessible area of production line.

NOTE: Motor starter, circuit breaker, and control circuitry are required.

2.2102 Electrical Power to Water Solenoid - Make connection between drive motor control circuitry and water solenoid for spray bars.

2.2103 Electrical Power to Junction Box (Hydraulic Drive) - Make connection between junction box and control area.

2.2104 Electrical Power to Automatic Lubrication System - Make connection between drive power switch and controller (timer) of lubrication system.

2.2200 WATER CONNECTION - When routing water piping, do not interfere with access to machine covers and other moving or removable parts.

2.2201 Water to Spray Bars - Connection to spray bars is made at two (2) 1.00" (nominal) NPT nipples located on top at discharge end of machine.

NOTE: Vanmark recommends installation of solenoid valve connected to main power switch and manual shut-off valves and flow meters upstream and downstream of solenoid to insure efficient operation and water usage.

2.2202 Water to Heat Exchanger (Hydraulic) - Connect .75" (nominal) NPT cooling water inlet to hose at end top port of heat exchanger. Connect .75"(nominal) NPT water outlet to hose at end bottom port of heat exchanger. Arrange water outlet piping so cooler remains flooded with water.

NOTE: Vanmark recommends installation of manual shut off valve upstream of solenoid to insure efficient operation and water usage.

2.2300 AIR CONNECTION - When routing air piping, do not interfere with access to machine covers and other moving or removable parts.

2.2301 Air to Automatic Lubrication System - Make connection to inlet port [.125" (nominal) NPT] located on air filter of automatic lubrication system.

2.2400 HYDRAULIC CONNECTION

2.2401 Tighten Fittings - Check that all fittings are tight.

2.2000 UTILITY AND HYDRAULIC CONNECTIONS

2.2402 Remote Hydraulic Power Unit - If Vanmark does not supply power unit, run one (1) 1.50" pressure line, and six (6) .50" return lines (or equivalent) from fittings provided on machine to power unit.

NOTE: Vanmark does not supply required tubing and fittings for remote installation.

2.2500 GREASE TO AUTOMATIC LUBRICATION SYSTEM - Maximum allowable distance between remotely located injectors of grease pump and distributors at discharge end of peeler is twenty (20) feet. Vanmark supplies forty (40) feet of .31" O.D. stainless steel tubing for these two (2) connections, twenty (20) feet per connection.

2.2501 Prior to Start-Up - Line leading to the lubrication points should be connected up only when pump is working satisfactorily. (Pump is working correctly when grease from outlets is free of bubbles.) Lines to the lubrication points should be filled with lubricant before they are connected to injector, so that lubricant is present at lubrication points at the start up.

3.1000 INITIAL START - UP

3.1001 Auger discharge - Check that hydraulic flow control valve is in closed position.

3.1002 Tumbling Unit - Check that hydraulic flow control valve is in closed position.

3.1003 Drive System - Check that reservoir is full. Hydraulic flow control valve should be in closed position.

3.1004 Lubrication
Discharge - Check to insure that all bearings are greased and grease if required.
Automatic Lubrication - Check that grease pump reservoir is full and oil reservoir on lubricator of air set is full.

3.1005 Loose Equipment - Check that all chutes and other loose items are in their proper place.

3.1006 Peeling Chamber - Check that peeling chamber does not contain any loose items.

3.1007 Covers - Close and latch all covers.

3.1008 Personnel - Check that all people are clear of machine.

3.1009 Power - Drive System: Turn on power.

3.1010 Motor Rotation - Check that rotation of drive motor is clockwise.

3.1011 Correct Rotation - When viewed from the discharge end of machine, following rotations are correct:
Discharge Auger turns clockwise.
Product turns clockwise.
Rollers turn counterclockwise.
Tumbling Unit paddle shaft turns clockwise.

3.1012 Auger Discharge - Open flow control valve to check for proper operation and then close.

3.1013 Tumbling Unit - Open flow control valve to check for proper operation and then close.

3.1014 Water - Turn on water to spray bars. Check that manual valves to spray bars are open.

3.1015 Water - Turn on water to heat exchanger on hydraulic system.

3.1016 Air - Turn on air to automatic lube system.

3.1017 Drive System - Open hydraulic flow control valve until roller speed is about 250-300 RPM.

3.1018 Tumbling Unit - Open hydraulic flow control valve until paddle speed is slightly greater than product speed.

3.1019 Product Tests - Machine is now ready to run with product.

3.1020 Filling Bed - Allow peeler/washer chamber to fill with a deep bed of product. Product fed to machine should be controlled to flow evenly.

3.1000 INITIAL START - UP

3.1021 Auger Discharge - Open hydraulic flow control valve until product depth levels at point needed to accomplish good peel removal.

NOTE: See Section 3.2000 Adjustments

3.1022 End of Test - See Section 3.4000 for shutdown sequence of operation.

3.1023 Set Screws - Tighten set screws on bearings, couplings and sprockets.

3.1024 Hydraulic Filter - Replace hydraulic filter after initial fifty (50) hours of operation.

3.1025 Daily Operation - Machine is now ready for production. See Section 3.3000 for start-up sequence of operation.

3.2000 ADJUSTMENTS

3.2001 Three factors effecting continuous peeling efficiency are:

1. Effect of roller surface on product.
2. Amount of roller surface moving past product.
3. Retention time of product in peeling chamber.

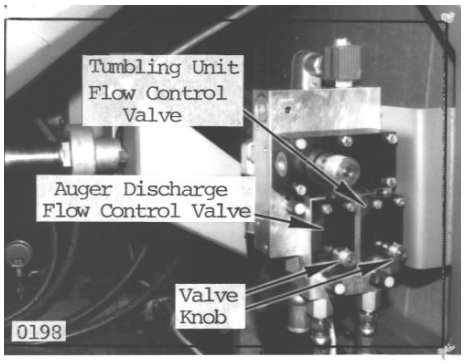
By regulating product load level, retention time and effect of roller surface is controlled. Load level is controlled by a variable speed auger. By regulating peeling roller speed, amount of roller surface moved past product is controlled. Speed is adjusted by a hydraulic flow control valve.

3.2002 Adjustments are a judgment of operator that is made by examining product when it reaches inspection table. Speed of rolls or auger speed should compliment each other.

Remember - - too much peel removal creates excess product loss. Proper adjustment is essential for efficient operation of machine.

3.2003 There are also adjustments that may be required to hydraulic drive systems and automatic lubrication systems to maintain efficient operation.

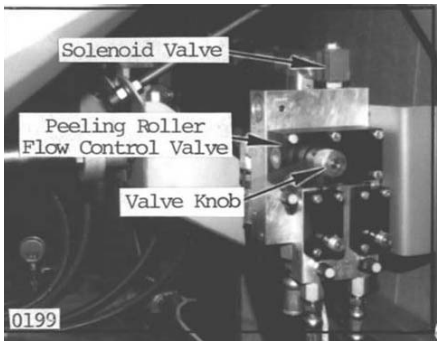
3.2100 AUGER DISCHARGE SPEED CONTROL



Auger discharge speed is controlled hydraulically with (counterclockwise) to increase auger speed and to right (clockwise) to decrease speed to a position where valve is completely shut off. Colored discs on knob stem can be used to set knob for predetermined auger speeds.

Shown for illustration purposes only.
Do not operate without guards in place.

3.2200 PEELING ROLLER SPEED CONTROL



Peeling roller speed is controlled hydraulically with flow control valve located at inlet end of machine. Rotate knob to left (counterclockwise) to increase roller speed and to right (clockwise) to decrease speed to a position where valve is completely shut off. Colored discs on knob stem can be used to set knob for predetermined roller speeds.

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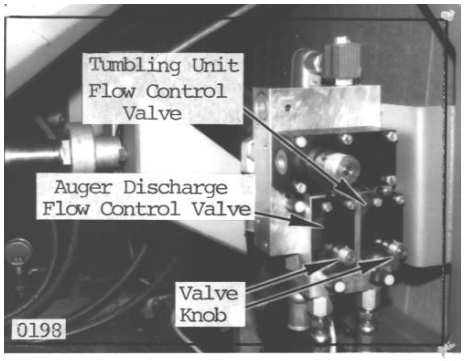
3.2300 TUMBLING UNIT SPEED CONTROL



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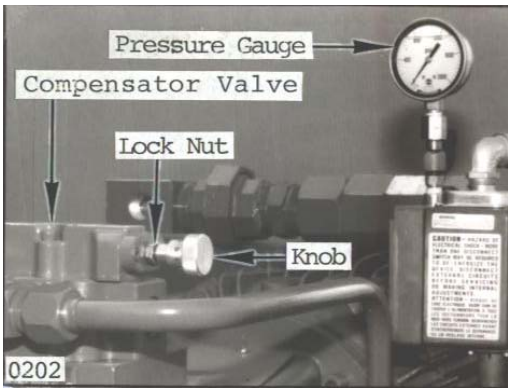
Tumbling Unit speed is controlled hydraulically with flow control valve located at inlet end of machine. Rotate knob to left (counterclockwise) to increase paddle speed and to right (clockwise) to decrease speed to a position where valve is completely shut off. Colored discs on knob stem can be used to set knob for predetermined paddle speeds.

3.2400 HYDRAULIC DRIVE SYSTEM

3.2401 Fluid Pressure



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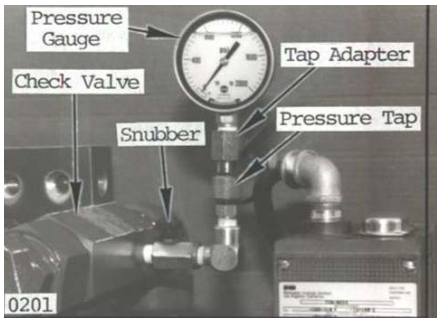
Hydraulic system fluid pressure is set at factory. Pressure setting on Serial No. M28** 100188 and after is 1000 PSI.

If pressure is set too high, motor will be overloaded.
If pressure is set too low, peeling rolls may stall.

To set this pressure, run machine with peeling roller, auger discharge and tumbling unit (if equipped) flow control valves in off position. Loosen hex lock nut on compensator valve located on top of hydraulic pump. Rotate knob to right (clockwise) to increase pressure and to left (counterclockwise) to decrease pressure until correct pressure gauge reading is obtained. Tighten lock nut to retain knob in this position.

3.2402 Fluid Pressure Test Points



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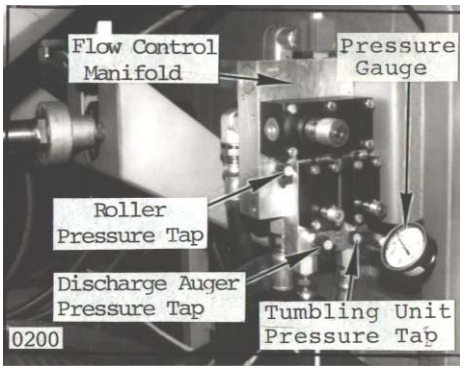

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1. Each machine has a pressure gauge mounted on check valve located on hydraulic pump outlet port. Gauge is connected to check valve by a snubber, pressure tap and tap adapter. Snubber is used to shut off gauge from line pressure or when partially opened, reduces or eliminates gauge pointer pulsations. Pressure gauge is attached to tap adapter permitting it to be removed from pressure tap, under pressure. There are two (2), three (3) if tumbling unit is installed, additional pressure taps located on each flow control manifold.

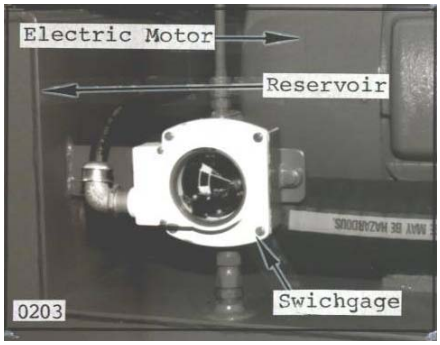
2. To test circuit fluid pressure for roller discharge auger and tumbling unit drives, unscrew tap adapter
and gauge from hydraulic pump pressure tap and attach to pressure tap on flow control manifold assembly for circuit to be tested. Yellow cap, which protects pressure tap, must be unscrewed before attaching gauge.

3. It is recommended that fluid pressure for each of these circuits be recorded when machine is operating under no load and normal full load operation. These pressure readings could be helpful in identifying hydraulic fluid system problems.

PRESSURE READINGS

	No Load	Normal Full Load	Date
Hydraulic Drive Motor	_____	_____	_____
	_____	_____	_____
Rollers	_____	_____	_____
	_____	_____	_____
Auger Discharge	_____	_____	_____
	_____	_____	_____
Tumbling Unit	_____	_____	_____
	_____	_____	_____

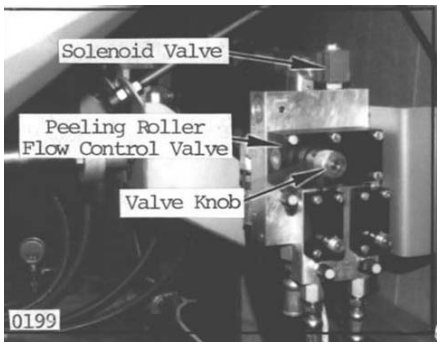
3.2403 Low Level Float Switch



Shown for illustration purposes only.
Do not operate without guards in place.

1. This gauge, located on hydraulic reservoir, combination hydraulic fluid level gauge and low limit switch. A pivotal float operates a fluid levelindicator during normal operation and closes a switching circuit if fluid level falls below predetermined low-limit set point. When switching circuit, connected to holding contact on main drive magnetic starter closes, electric drive motor is shut down.

3.2404 Solenoid Valve - Intermittent Operation

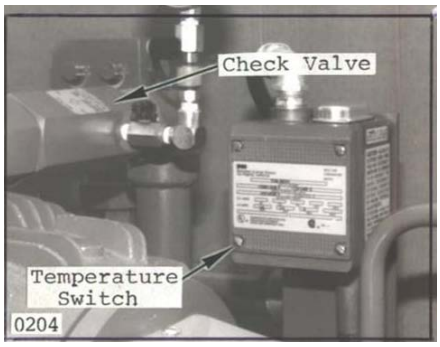


Shown for illustration purposes only.
Do not operate without guards in place.

1. Solenoid valve, located on top of hydraulic flow control manifold, stops peeling bed discharge auger and tumbling unit (if equipped) drives. Hydraulic fluid is by-passed which stops peeling rolls, discharge auger and tumbling unit drives without shutting off electric motor driving hydraulic pump. This valve is controlled electronically by a down stream product level indicator.

NOTE: A plug, to replace solenoid valve, is wired to each flow control manifold.

3.2405 Temperature Switch



Shown for illustration purposes only.
Do not operate without guards in place.

1. Temperature switch is located on a bracket mounted on pump outlet piping and has a probe which mounts in reservoir. Low set point of switch closes contact and energizes water solenoid at 110°F. Upper set point of switch is connected in series with electric motor starter control. At 150°F normally closed contact will open and shut off power to drive motor of power unit.

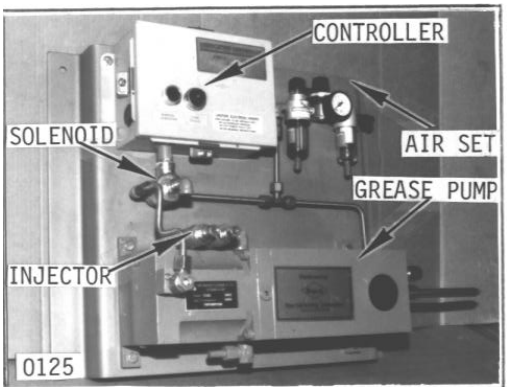
2. To set low and high set point, remove cover from top of switch.

3. Turn adjustment knobs clockwise to increase actuation point (switch setting) and counterclockwise to decrease actuation point.

3.2000 ADJUSTMENTS

3.2500 AUTOMATIC LUBE SYSTEM

3.2501 Pump Pressure



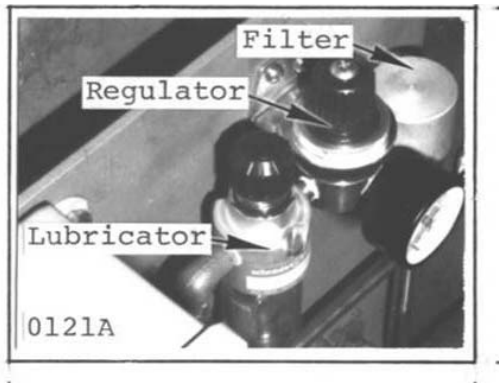
1. Minimum grease pressure may not be reached due to air pockets in grease.

2. To remove air pockets, disconnect grease line at injector.

3. Operate pump until grease discharging at injector is free of bubbles.

4. Reconnect grease line at injector.

3.2502 Air Set Regulator Pressure



1. Loosen lock screw in center of knob.

2. Turn knob clockwise to lower pressure setting and counterclockwise to increase pressure setting.

NOTE: Reduced pressure will not be obtained until airflow starts.

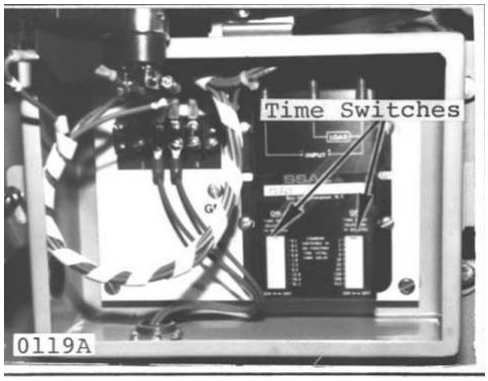
3.2503 Air Set Lubricator Pressure

1. Check lubrication of equipment by holding thumbnail or mirror near exhaust opening - a slight film of oil should be deposited each exhaust cycle. Heavy film indicates over lubrication and drops per minute should be reduced by reducing pressure. (See photograph 0121A above.)

2. Clockwise rotation of adjusting screw decreases pressure.

3. Counterclockwise rotation increases pressure. NOTE: DO NOT turn adjusting screw more than 1 1/2 turns counterclockwise from the closed position.

3.2504 Controller (Set Timer)



Shown for illustration purposes only.
Do not operate without guards in place.

1. SHUT OFF AND LOCK OUT ELECTRIC POWER to prevent accidental starting.

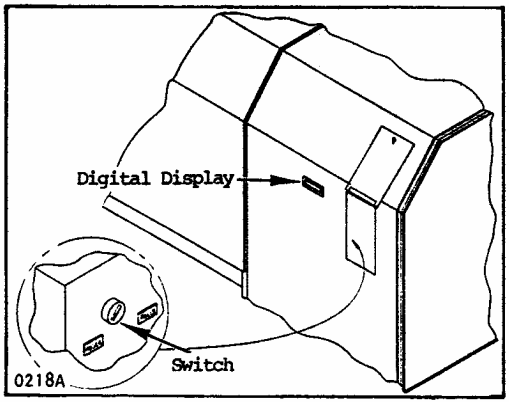
2. Loosen four (4) .25-28 screws on cover and remove clasps and cover.

3. "On" switches of timer are in tenths of minute and "Off" switches of timer are in minutes.

4. Switches are preset at 1.0 minute on and 12.0 minutes off. Reset switches if this setting is not appropriate for your application.

3.2600 TACHOMETER SYSTEM

3.2601 Tachometer Display



1. Roller or auger discharge RPM is shown on a digital display. Magnetic pickups on roller coupling and auger discharge shaft provide means by which this information is fed to display unit. Display for roller or auger discharge RPM is controlled by a two position selector switch. Rotate knob to left (counterclockwise) to show roller speed and to right (clockwise) to show auger speed.

3.3000 START - UP

3.3001 Loose Equipment - Check that all chutes or other loose items are in their proper place.

3.3002 Discharge

Auger Discharge - Hydraulic flow control valve should be in closed position.

3.3003 Tumbling Unit - Hydraulic flow control valve can be left open in operating position.

3.3004 Covers - Close and latch all covers.

3.3005 Power

Drive System - Turn on power.
Automatic Lubrication System - Turn on power to timer. (If automatic lubrication system is not interconnected with power to drive system)

3.3006 Water - Turn on water to heat exchanger (hydraulic systems). Turn on water to spray bar. (If water is not interconnected with solenoid to drive system)

3.3307 Automatic Lubrication System - Turn on air to air set. (If automatic lubrication system is not interconnected with solenoid to drive system.)

3.3008 Drive System - Open hydraulic flow control valve until roller speed is about 250-300 RPM.

NOTE: See Section 3.2000 Adjustments

3.3009 Filling Bed - Allow peeler/washer chamber to fill with a deep bed of product. Product fed to machine should be an even metered flow.

3.3010 Tumbling Unit - After product bed is established, adjust hydraulic flow control valve so paddle speed is slightly greater than product speed.

3.3011 Auger Discharge - Open the hydraulic flow control valve until the product depth levels at the point needed to accomplish good peel removal or wash.

3.4000 SHUT - DOWN

3.4001 Product Flow - Stop product flow to machine.

3.4002 Empty Bed

Slow Peeling rollers to minimum speed. Allow all product to discharge from bed.

Auger Discharge - Close hydraulic flow control valve after peeling bed is empty.

Tumbling Unit - Hydraulic flow control valve can be left open in operating position.

3.4003 Lubrication - Grease discharge bearings by pushing manual operation button on controller that it is mounted above grease pump.

3.4004 Water - Shutoff water to spray bar manually at valve by machine.

3.4005 Cleaning - Wash down peeling chamber. Make sure that all product residue is removed from rolls.

NOTE: During high-pressure cleaning do not aim steam directly on hydraulic reservoir breather cap, gauges, rubber seals of shaft bearings, or control box of automatic lubrication system.

3.4006 Power - Shutoff electric power to drive, heat exchanger cooling water solenoid, solenoid and spray bar water solenoid, automatic lubrication system water control valve.

3.4007 Water - Open water valve to spray bar.

3.4008 Covers - Close all covers.

3.4009 Clean exterior of machine - High pressure spray or a cleaning solution used with a cloth, is recommended.

NOTE: During high-pressure cleaning do not aim steam directly on hydraulic reservoir breather cap, gauges, rubber seals of shaft bearings, or control box of automatic lubrication system.

3.4010 Lubrication - After wash-down grease discharge bearings by pushing manual operation button on controller that is mounted above grease pump.

3.4011 Loose Equipment - Check that all chutes or other loose items are in their proper place.

4.1000 ROUTINE SERVICING

4.1001 Your Vanmark Peeler/Washer is designed and constructed for efficient operation, but it does require service and maintenance. A major breakdown can be expensive. Therefore, it is economical to follow this routine servicing program to assure that problems can be detected and corrected.

4.1002 Service schedule is estimated based on eight (8) hours of production per day, five (5) days per week under normal operating conditions. Schedule may require adjustments if production time and operating conditions are different.

4.1100 Daily

- Clean peeling chamber.
- Check condition of peeling rolls.
- Manually grease roller bearings at discharge end of machine after cleaning peeling chamber.
- Grease bearings that support auger at discharge end of machine.
- Check for clogged nozzles on spray bar.
- Check for line up-time (maximum number of shut-offs not to exceed three (3) times per hour with 85 - 90% line up-time).
- Check for hydraulic leaks.
- Check fluid level in hydraulic reservoir.

4.1200 Weekly

- Check for loose or binding hardware.
- Check bearings for wear.
- Clean abrasive rolls with diluted muratic acid. Let stand approximately two (2) hours (vary time with amount of starch and peel build up). Scrub abrasive surface with stiff brush and rinse thoroughly. Personnel should wear personal protective equipment as recommended by cleaning agent manufacturer or employer.
- Oil auger discharge chains.
- Check hydraulic filter and replace if indicator in red area of gauge, or indicates above 15 psi.

Automatic Lubrication

- Check grease level of pump.
- Check oil level of lubricator.
- Check air filter.

4.1300 Monthly

- Tighten set screws in bearings, sprockets, and aluminum drive couplings.
- Inspect plastic insert in aluminum drive couplings for wear.
- Inspect hoses for wear.

4.1400 Quarterly

Automatic Lubrication

- Clean air filter.

4.1500 Annually

- Have fluid analyzed by supplier and change if necessary.
  NOTE: Do not mix oil types. Any mixture or unapproved oil can deteriorate seals.
- Replace or clean air breather on reservoir.
- Replace filter element.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Poor Peel Removal	Tumbling (mixing) action in peeling chamber is slow	Increase roller speed - See Section 3.2200 Replace worn rollers - See Section 4.4100
	Too much product in peeling chamber	Adjust discharge auger speed - See Section 3.2100
	Poor line up-time	Control product flow evenly - See Section 3.2100
	Abrasive rollers have starch build - up or are worn	Clean or replace - See Section 4.4100
	Not enough water	Check spray bar nozzles for clogging and adjust water flow
	Brush rollers are worn	Replace - See Section 4.4100
	Brushes installed backwards	Reverse - See Section 4.4100
	Sequence and type of rollers is not effective with product	Contact Vanmark for recommendation
	Roller rotation is clockwise at discharge end	Change roller rotation to counterclockwise
Product loss from peeling chamber	Roller surfaces worn	Replace - See Section 4.4100
	Splash guards improperly aligned	Realign - See Section 4.4102
	Discharge product protectors missing or improperly installed	Replace or reinstall
	Roller speed and discharge settings are not synchronized	Adjust - See Section 3.2001
Not all rollers turning	Defective hyd. motor	Replace - See Section 4.5301
Rollers run unevenly	Urethane insert in roller drive coupling worn	Replace roller drive coupling - See Section 4.5100
	Auger discharge obstructed	Remove obstruction
Rollers not turning	Product or foreign item jammed in bed	Remove
	Power is off	Turn on power
	Hydraulic solenoid valve is off	Turn on or activate control circuit

4.2000 TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Rollers run clockwise at discharge end	Hydraulic lines reversed	Reverse connections
	Drive motor rotation is counterclockwise	Change rotation to clockwise
Auger does not rotate	Valve is in closed position	Open valve - See Section 3.2100
	Chain disconnected	Reconnect - See Section 4.3004
	Sprocket loose on drive shaft or driven shaft	Tighten set screws - See Section 4.3004
Electric drive motor does not run	Power is off	Turn on power
	Wiring loose or disconnected at motor or motor starter	Check wiring
	Motor defective	Overhaul or replace motor - See Section 4.5205
	Breaker off or tripped	Reset breaker
Drive Motor runs, rollers do not	Product level indicator has tripped solenoid at hydraulic flow control manifold (Intermittent Operation)	Reset product level indicator (If needed)
No water to spray bar	Manual valve closed	Open valve
	Nozzles on spray bar clogged	Clean
	Solenoid defective	Replace solenoid
No grease to bearings (Automatic lubrication)	Air filter is clogged	Clean - See Section 4.6101
	Grease pump reservoir empty	Fill - See Section 4.6104
	Air solenoid defective	Replace
	Timer not set or defective	Reset or replace
	Air regulator pressure is not set high enough	Reset

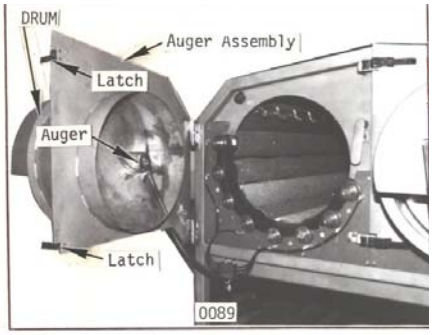
PROBLEM	POSSIBLE CAUSE	SOLUTION
HYDRAULIC SYSTEM		
Insufficient system pressure	Defective pressure gauge or gauge line is shut off	Check that gauge orifice in not plugged and replace gauge if defective.
	Compensator valve on top of hydraulic pump not set high enough	Adjust system pressure to 1,000 PSI - See Section 3.2401
Pump not delivering fluid	Fluid level low in reservoir	Maintain fluid level - See Section 4.5201
	Filter element clogged or dirty	Replace filter element - See Section 4.5201
	Sheared key at coupling to motor	Check and replace if sheared
	Sludge or dirt in pump	Remove pump. Clean entire system (Including pump) and fill with clean fluid - See Section 4.5203
System operating excessively hot (150° or above)	Pressure higher than required (Above 1000 PSI)	Reduce pump pressure at compensator valve on pump - See Section 3.2401
	No cooling water	Check cooling water flow to heat exchanger
	Fluid level low in reservoir	Maintain fluid level - See Section 4.5201
Excessive pump noise	Fluid level low in reservoir	Maintain fluid level - See Section 4.5201
	Restricted filter element	Replace filter element - See Section 4.5201
	Coupling between pump and motor misaligned	Realign pump and motor - See Section 4.5204
	Worn or broken parts on pump	Repair or replace - See Section 4.5203

4.3000 AUGER DISCHARGE

4.3001 AUGER DISCHARGE - There are several different procedures for servicing and repairing auger discharge. To gain access to peeling chamber, auger discharge is opened. Oiling chain requires removal of front chain shield. Disassembly is required to repair or replace chain, sprockets or bearings. Removing hydraulic motor requires disconnecting hoses.

DO NOT place hand or arm in auger compartment while machine is operating.
DO NOT operate with chain guard removed.

4.3002 Open/Close Auger Discharge



Shown for illustration purpooses only.
Do not operate without guards in place.

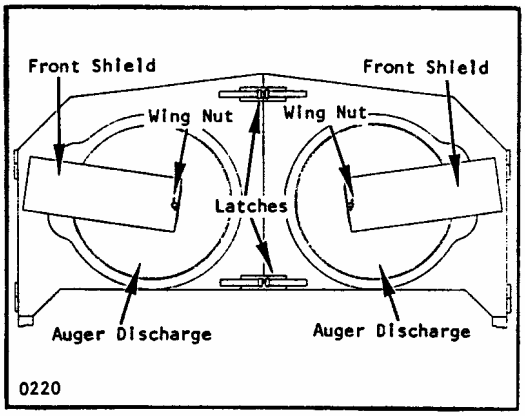
1. Place auger hydraulic flow control valve in closed position.

2. To open, lift latches and swing auger assembly away from frame.

3. To close, swing assembly towards frame. Make sure that pivoting tongue of handle is underneath latch.

NOTE: It is not necessary to disconnect hydraulic hoses.

4.3003 Chain Shield Removal



Shown for illustration purpooses only.
Do not operate without guards in place.

1. Place auger hydraulic flow control valve in off position.

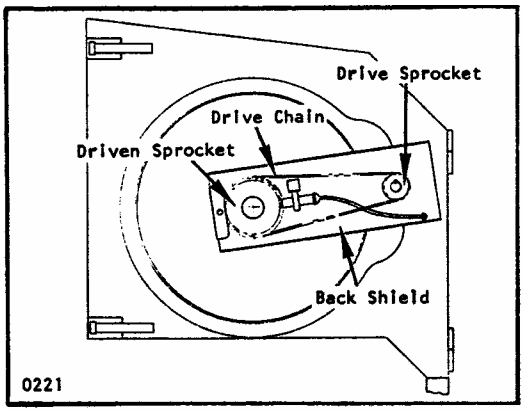
2. SHUT - OFF AND LOCK - OUT ELECTRIC POWER to prevent accidental starting.

3. Loosen and remove .50" wing nut. Remove front shield.

4. Reverse this procedure to reassemble.

4.3004 Repair or Replace Parts (Chain, Sprockets, Bearings)

Disassembly



Shown for illustration purpooses only.
Do not operate without guards in place.

1. Place auger hydraulic flow control valve in off position.

2. SHUT - OFF AND LOCK - OUT ELECTRIC POWER to prevent accidental starting.

3. Remove chain shield as described in Section 4.3003.

4. Locate and remove connecting link and remove chain.

5. Remove cap screw and washer retaining auger discharge sending unit pickup gear and remove gear.

6. Loosen two (2) .31-18 socket set screws on each sprocket. Remove sprockets from shafts.

7. Loosen and remove two (2) .38-16 x 1.50" cap screws, nuts, and lock washers from hydraulic motor and ack chain shield. Remove back chain shield.

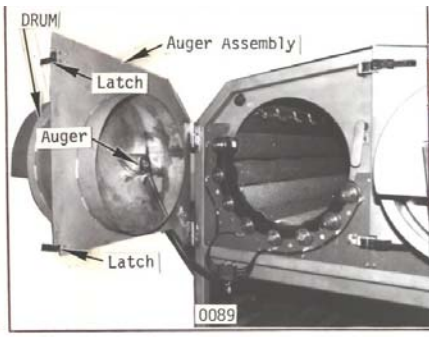
8. Open auger assembly approximately 90°.

9. Loosen and remove two (2) .50-13 x 2.00" cap screws, nuts, and lock washers that attach bearings.

10. Loosen two (2) .25-20 set screws on collar of outer bearing and remove bearing. Lift auger with inner bearing attached. If bearing removal is required, loosen set screws.

11. Clean and inspect all parts. Replace parts as required.

Reassembly



Shown for illustration purpooses only.
Do not operate without guards in place.

1. Place one (1) bearing on auger shaft, with flat face of base away from auger. DO NOT tighten set screws.

2. Place auger with bearing inside the discharge drum and extend auger shaft through 1.75" diameter hole in end plate of discharge drum.

3. Place the other bearing on auger shaft end with flat face of bearing towards discharge drum.

4. Install and snug - up two (2) .50-13 x 2.00" cap screws, nuts, and lock washers that attach bearings. Snug screws slightly, DO NOT tighten.

4.3004 Repair or Replace Parts (Chain, Sprockets, Bearings) (Cont.)

5. Adjust auger horizontally (by sliding through two (2) bearings) so that front auger flight (closest to the rollers) is flush with discharge drum. Allow approximately .125" clearance at bottom of drum.

NOTE: Correct alignment is required for product pickup and roller clearance.

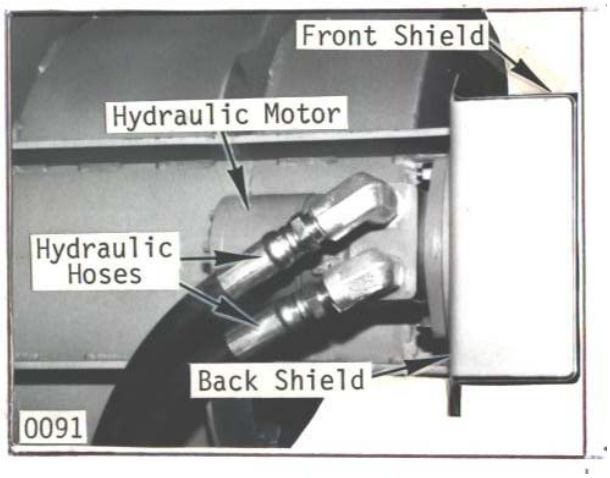
6. Tighten two (2) .25-20 set screws on collar of each bearing.

7. Center auger in discharge drum using spacers.

8. Tighten two (2) .50-13 x 2.00" cap screws, nuts, and lock washers that attach bearings.

9. Remove spacers and rotate auger manually. If auger does not rotate freely, loosen cap screws and repeat step No. 7 and 8.

4.3005 Repair or Replace Auger Discharge Hydraulic Motor



1. Place auger hydraulic flow control valve in closed position.

2. SHUT - OFF AND LOCK - OUT ELECTRIC POWER to prevent accidental starting.

3. Identify each hose and fitting to insure correct auger rotation.

4. As each hose end is disconnected, support it at least as high as when connected to prevent hydraulic fluid from draining.

5. Cap or tape hydraulic hose ends to prevent contamination of the hydraulic fluid.

6. Remove front chain shield as described in Section 4.3102.

7. Loosen two (2) .31-18 socket set screws on pump drive sprocket.

8. Loosen and remove two (2) .38-16 x 1.50" cap screws, nuts, and lock washers from hydraulic motor and back chain shield. Remove hydraulic motor.

9. Reverse this procedure to reassemble. Use Teflon tape or pipe compound on hose connections.

10. Turn on power and operate newly installed hydraulic motor. Check for fluid leaks and clockwise rotation of auger as viewed from discharge end.

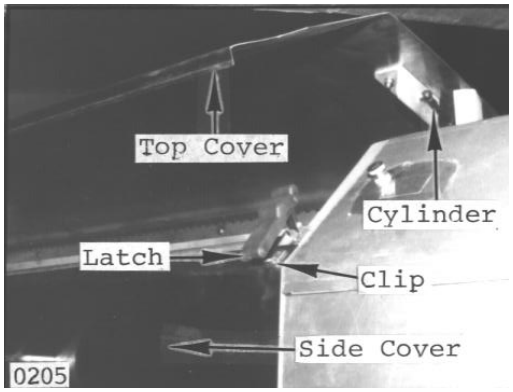
11. Check hydraulic fluid level in reservoir by liquid level sight gauge located on front side of reservoir. Fluid level should be even with high mark near top of sight gauge.

NOTE: Vanmark recommends replacing hydraulic filter element after replacement of any components in the hydraulic system.

4.4000 PEELING CHAMBER AND ROLLERS

4.4100 PEELING ROLLER REMOVAL - Removal is required to change shaft arrangement, replace roller bearings or when complete hydraulic motor mounting plate assembly is removed from drive compartment.

4.4101 Opening Peeling Chamber Side and Top Covers

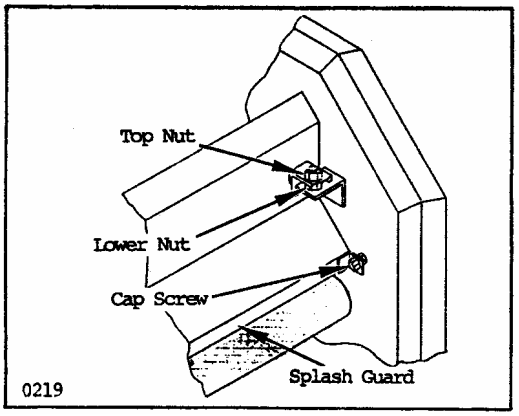


Shown for illustration purposes only.
Do not operate without guards in place.

1. Unlatch side cover by pulling on upper end of latch and release latch from clip on side cover. Gently fold down side cover that is hinged on bottom.

2. Raise hinged top cover. Two (2) spring cylinders assist in raising top cover and holding it in raised position.

4.4102 Splash Guard Removal - Outer splash guard from either chamber must be removed before starting work on roller removal.



Shown for illustration purposes only.
Do not operate without guards in place.

1. Remove cap screws and lock washers at bottom end of splash guard.

2. Remove top nuts at top end of splash guard. If possible do not disturb lower nuts that splash guards rests on. Clearance between bottom of splash guard and roller will not change if these nuts are not moved.

3. Remove splash guards by lifting up to clear mounting studs. Splash guards are designed right and left - they will not interchange.

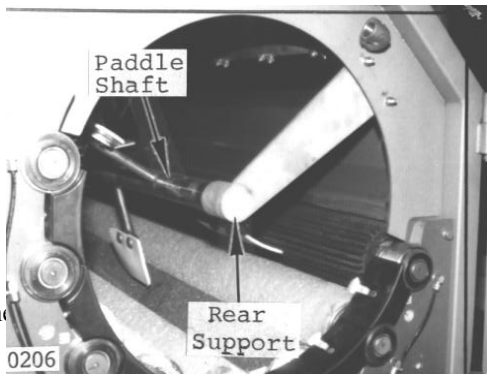
4. Reverse procedure to reassemble - Lower portion
of splash guards should clear roller by no more

than

.125 inch. Adjust lower nut on stud to obtain proper clearance. Rotate roller by hand one full turn to assure complete freedom of rotation.

4.4103 Opening Auger Discharge - Lift latches and swing discharge assembly open as described in Section 4.3002.

4.4104 Tumbling Unit Removal - Removal of Tumbling Unit paddle shaft is recommended before work is started on roller removal.



Shown for illustration purposes only.
Do not operate without guards in place.

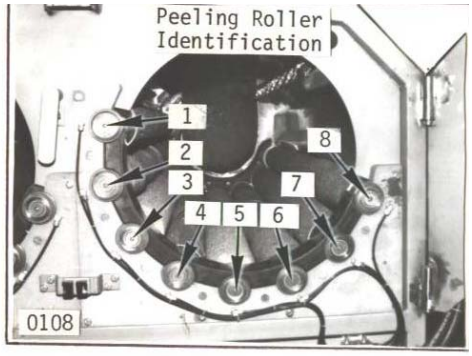
1. Support rear end of paddle shaft while removing cap screws which attaches rear support of paddle shaft to machine.

2. Remove rear support from end of paddle shaft assembly.

3. Slide paddle shaft assembly out of motor drive coupling and remove out discharge end of machine.

4. Reverse procedure to reassembly - Check that front V-Ring seal on paddle shaft is .25" from rear end of water seal cylinder and lip of rear seal is touching rear bearing sleeve.

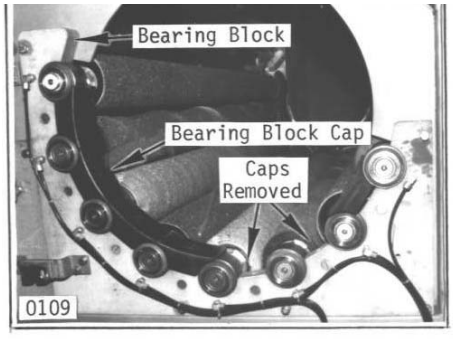
4.4105 Identifying Peeling Rollers



Shown for illustration purposes only.
Do not operate without guards in place.

1. Before removing any roller shafts in either chamber, identify kind of rollers and positions by numbering them from 1 through 8. Rollers must be reassembled in same position as they were originally installed so as not to change effect of peeling efficiency.

4.4106 Removing Bearing Block Caps



Shown for illustration purposes only.

1. Remove hardware retaining bearing cap and remove cap. Repeat procedure for remaining caps to be removed.

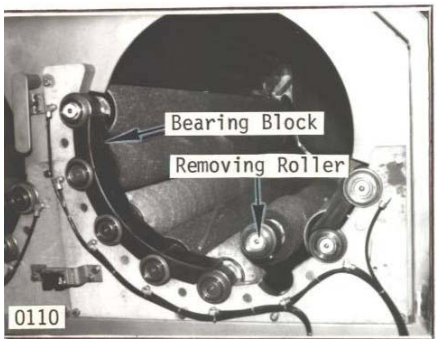
CAUTION: Do not disturb brass plug in bearing block into which cap screws are threaded. They will be correctly indexed for reassembly if not moved.

CAUTION: Use only "hard plastic" or "no bounce" hammer if required to loosen bearing caps. Do not strike bearing caps, bearing block, bearings, shaft

Do not operate without guards in place

end or roller with a steel hammer.

4.4107 Removing Peeling Roller



1. With all bearing block caps removed, tap LIGHTLY upward on lower rear end of roller shaft until bearing is loose in lower bearing block.

2. From side of machine, support shaft with both hands, lift discharge end high enough so roller will just clear bearing block. At same time apply lateral force together with a slight twisting (rocking) motion to help release inlet (drive end) from drive coupler. Remove shaft from machine. Repeat procedure for remaining rollers.

Shown for illustration purposes only.
Do not operate without guards in place.

IMPORTANT: Access to removing rollers in the RH chamber is made easier by first removing No. 1 and 2 roller.

4.4108 Reassembly of Peeling Rollers

1. Clean bearing block components.

IMPORTANT: Food grade anti - seizant is applied at factory to bearing bores, bearing shaft and all cap screw threads in this assembly at time of assembly. It is strongly recommended this procedure be followed to prevent seizure of any components.

2. To reassemble reverse procedure.
Rollers should be replaced in No. 4 and 5 positions first, working outward to each side. Install rollers in pairs noting the following:

A. Consult notes relating to original shaft arrangement.
B. Check that inner rubber grease seal is placed on each shaft ahead of bearing.
C. Four (4) set screws in bearing should be loose to allow bearing to slide on shaft.

3. Guide square end of roller shaft into drive coupling until end of shaft "bottoms out". Do not use force - firm hand pressure is sufficient.

4. Rotate bearing until protruding guide on outer bearing housing is aligned with lubrication hole in bearing block. Lower roller assembly into bearing block until bearing is seated in its natural repose. Descriptive lettering on bearing collar faces toward you.

5. With shaft still "bottomed out" against drive coupling, tighten four (4) socket head (Allen type) set screws (5/32 wrench) in each bearing removed or replaced.

6. Install inner and outer grease seals onto bearing. Thin lip (seal) must be touching cone of bearing all way around. Surface of grease seal and bearing must be clean and dry when installing seals in this operation.

4.4108 Reassembly of Peeling Rollers (Cont)

7. As each pair of rollers is installed, install bearing block cap with cap screw, lock washer and washer, and tighten finger tight. Proceed until all rollers are installed in this manner. Caps are installed with curved flange on each end toward front of machine. Flanges act as protector for roller bearing.

8. Tighten cap screw securely in each bearing cap.

9. Complete reassembly by reinstalling tumbling unit paddle shaft, closing auger discharge assembly and reinstalling splash guards. Lower top cover of chamber and fold up and latch side cover.

4.4200 ABRASIVE ROLLERS

Disassembly

1. Remove outer rubber grease seal and slide inner grease seal from bearing race to expose four (4) socket head (Allen type) set screws.

2. Loosen four (4) set screws and remove bearing from shaft. Remove inner grease seal.

3. Remove 1.38 - 6 locking nut with 2" aluminum socket provided with machine.

4. Remove shaft from assembly by pulling out from drive (square) end.

5. Remove polyurethane fixture from each end of roller.

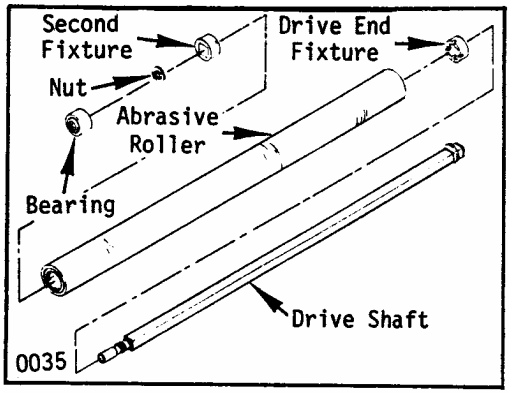
6. Clean all components thoroughly and inspect for abnormal wear or damage: if in doubt replace now.

IMPORTANT: Do not immerse double roller bearing in cleaning solvent. Wipe off exterior surface only. Replace bearing assembly if failure is apparent.

NOTE: Vanmark will recondition abrasive rollers. Worn rollers are thoroughly cleaned and a new coat of abrasive added.

Reassembly

roller.



1. Install polyurethane fixture in drive end of Check that roller drive lugs are nested in fixture recesses.

NOTE: Rollers that have more than one grade of abrasive "grit", drive end ordinarily is end with larger (coarsest) abrasive. This end is mounted at inlet or drive end of machine. Other rollers are not directional; either end can be used as drive.

2. Install shaft through fixture and roller. Care should be taken not to damage threads on bearing shaft by striking roller tube lugs.

3. Slide second polyurethane fixture over bearing shaft. Elevate shaft to center of roller. Align polyurethane fixture recesses with roller lugs and push fixture "home".

4.4200 ABRASIVE ROLLERS (Cont.)

4. Install 1.38-6 nut. Before tightening nut securely, center polyurethane fixture in roller for smoother operation.

5. Install inner grease seal on shaft with thin large lip towards you.

6. Slide bearing on shaft with descriptive lettering on bearing collar facing toward threaded end of shaft. Do not tighten set screws at this time. Abrasive roller is ready to install in machine.

4.4300 SINE-WAVE ABRASIVE ROLLERS

Disassembly

1. Remove outer rubber grease seal and slide inner grease seal from bearing race to expose four (4) socket head (Allen type) set screws.

2. Loosen four (4) set screws and remove bearing from shaft. Remove inner grease seal.

3. Remove 1.38-6 locking nut with 2" aluminum socket provided with machine.

4. Place board of suitable size on floor. With bearing (threaded) end facing down, strike board with entire roller assembly. This should loosen segments from shaft. Repeat procedure if segments do not come loose first time.

NOTE: Do not strike bearing shaft on bare floor or with hammer. Damage requiring dressing down or replacement could result.

5. Remove segments from bearing end of shaft. Stop washer prevents removal from drive (square) end.

6. Clean all components thoroughly and inspect for abnormal wear or damage: if in doubt replace now.

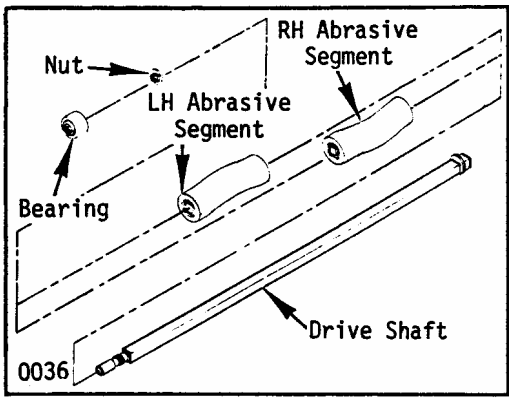
IMPORTANT: Do not immerse double roller bearing in cleaning solvent. Wipe off exterior surface only. Replace as assembly if failure is apparent.

NOTE: Vanmark will recondition abrasive rollers. Worn segments are thoroughly cleaned and new coat of abrasive added. If chunks of the rubber core are missing, replace that segment.

4.4300 SINE-WAVE ABRASIVE ROLLERS (Cont.)

Reassembly

1. Stand abrasive segments on end so that stamped word (either right or left) is facing up and on side of segment away from you. If more than one grade of abrasive segment is installed on same shaft, large (coarsest) grit segments ordinarily go next to drive (square) end of shaft and are put on first.



2. Rest drive end of shaft on floor and support bearing end. Place segments on shaft with stamped word towards you. Slide it towards drive end until stop washer is seated in recess of segment.

3. Repeat procedure to install remaining four (4) segments. Always keep stamped word towards you and in direct line with word on segment previously installed. Do not install right and left segments on same shaft.

NOTE: Hand of segment can be determined, if needed, by looking along its length from either end. If curves to the right, it is right hand.

4. Install 1.38-6 nut and tighten securely. Segments must not appear to be loose on shaft, however, do not over tighten as damage to segments can occur.

5. Install inner grease seal on shaft with thin large lip towards you.

6. Slide bearing on shaft with descriptive lettering on bearing collar facing toward threaded end of shaft. Do not tighten set screws at this time. Sine-wave roller is ready to install in machine.

4.4400 BRUSH ROLLERS

Disassembly

1. Remove outer rubber grease seal and slide inner grease seal from bearing race to expose four (4) socket head (Allen type) set screws.

2. Loosen four (4) set screws and remove bearing from shaft. Remove inner grease seal.

3. Remove 1.38-6 locking nut with 2" aluminum socket provided with machine.

4. Remove shaft from brush roller assembly by pulling out from drive (square) end.

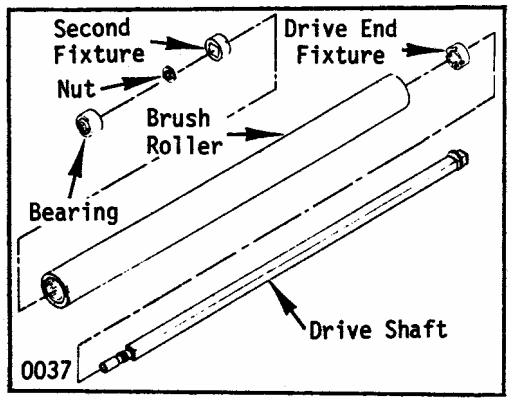
5. Remove polyurethane fixture from each end of roller.

6. Clean all components thoroughly and inspect for abnormal wear or damage: if in doubt replace now.

IMPORTANT: Do not immerse double roller bearing in cleaning solvent. Wipe off exterior surface only. Replace bearing assembly if failure is apparent.

4.4400 BRUSH ROLLERS (Cont.)

Reassembly -- Brush rollers can not be reconditioned. They must be replaced when worn. Black band of bristles, at one end of new brush, identifies drive end. Bristles are slanted five (5) degrees in direct relationship to wrap of bristles on tube.



1. Install polyurethane fixture in drive (black bristled) end of brush. Check that roller drive lugs are nested in fixture recesses.

2. Install shaft through fixture and brush roller. Care should be taken not to damage threads on bearing shaft by striking lugs on brush tube.

3. Slide second polyurethane fixture over bearing shaft. Elevate shaft to center of roller. Align polyurethane fixture recesses with roller lugs and push fixture "home".

4. Install 1.38-6 nut. Before tightening nut securely, center polyurethane fixture in roller for smoother operation.

5. Install inner grease seal on shaft with thin large lip towards you.

6. Slide bearing on shaft with descriptive lettering on bearing collar facing toward threaded end of shaft. Do not tighten set screws at this time. Brush roller is ready to install in machine.

4.4500 PINTLE ROLLERS - Use disassembly and assembly instructions for sine-wave abrasive rollers. Disregard reconditioning statement in disassembly instructions. Right and left notations in assembly instructions are for sine-wave pintle segments. Straight segments do not require timing. All pintle segments are separated by a rigid spacer. See Section 5.2000.

4.5000 DRIVE - ROLLER DRIVE COUPLING

4.5100 ROLLER DRIVE COUPLING - Drive coupling provides support for drive end of each roller and connection between power source and peeling bed rollers. No maintenance or adjustment is required for day-to-day operation. Visual inspection on regular basis should be made for cracks in casting, loose or missing set screws and looseness of coupling on its drive shaft. When any peeling rollers are removed from machine careful inspection of urethane mold should be made. Check for square opening to be excessively worn (or egg shaped), softness of urethane mold and that urethane is firmly adhered to casting. Replace coupling if any one of these conditions are found.

Drive couplings are bored to a very close tolerance. Couplings are installed on shaft by heat-shrink process.

WARNING: DO NOT:

A. Increase bore diameter of coupling.
B. Decrease (dress down) overall size of output shaft.
C. Overheat casting to point of melting or otherwise destroying urethane mold.
D. Use undue force when mounting coupling.

Disassembly

1. Remove from machine peeling roller driven by that particular coupling being removed.

2. Remove hydraulic motor from machine.

3. Loosen set screw in drive coupling. Remove coupling from shaft using gear puller. Coupling may be reused depending upon its condition.

Reassembly

1. Check key in output shaft keyway for nicks. Replace if necessary.

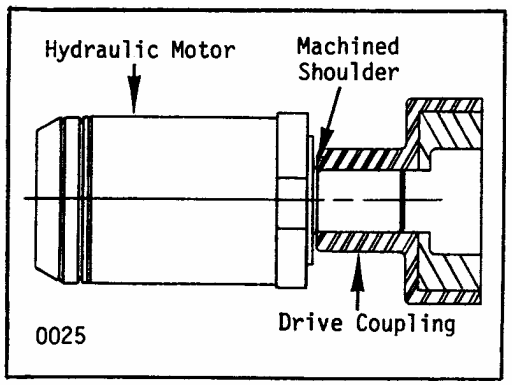
2. Clean any foreign material from surface of output shaft. Do not reduce overall diameter of shaft.

3. Remove any nicks or burrs from bore and keyway of coupling. Do not enlarge inside bore diameter.

4. Remove set screws from coupling.

5. Place coupling on work area with urethane down. Apply heat with torch for a few moments to external part of bore. Do not overheat. Rotate coupling to distribute heat evenly.

WARNING: Always wear appropriate eye protection. Use heavy gloves as aluminum couplings become too hot to handle with bare hands.



6. Align keyways of shaft and coupling. Lightly tap motor end with plastic coated dead blow hammer onto motor shaft. Correctly heating casting and speed in installing will allow coupling to "slip" onto its mating shaft quite easily. Then set the assembly aside with coupler facing up to allow heat to rise away from motor. Do not put set screws back in coupler until it is cool, as coupler may crack if screws are installed when coupler is hot.

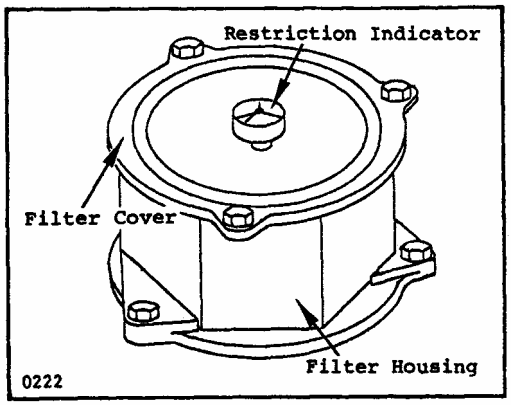
7. Placement of drive coupling on hydraulic motor shaft; coupling should "bottom out" on machined shoulder of motor shaft.

4.5000 DRIVE - HYDRAULIC FILTER

4.5200 HYDRAULIC DRIVE ASSEMBLY

4.5201 Hydraulic Filter

Disassembly (Replace Filter Element)



1. SHUT-OFF AND LOCK-OUT ELECTRIC POWER to prevent accidental starting.

2. Remove three (3) cap screws, lock washers and washers retaining top cover of filter housing assembly.

3. Remove cover from top of filter housing. Care should be taken not to damage O-ring seal in groove on top of filter housing.

4. Remove compression spring located on top filter element and remove filter element.

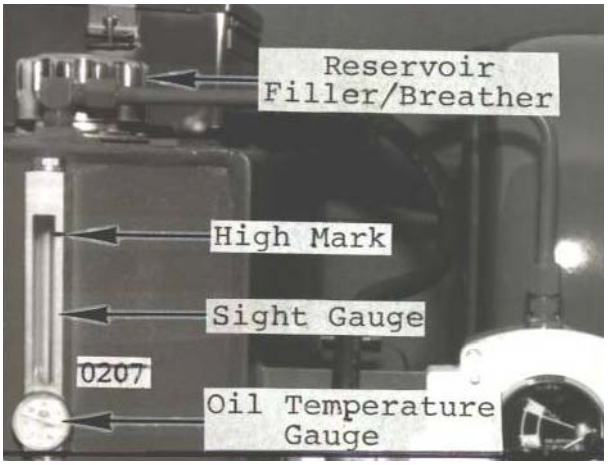
5. Remove any residual fluid that may remain in filter can and clean out any sediment which may have collected around bottom of filter can. Filter can may be removed and flushed.

Reassembly

1. Install new filter element into filter can.

2. Place compression spring into recess on top of filter element.

3. Reinstall cover with three (3) cap screws, lock washers and washers. Check, when reinstalling cover, that compression spring is centered between four prongs protruding from bottom side of cover and that cover is rotated so that restriction indicator on top of cover can be read from LH side of machine. Torque cap screws 6 ft. lbs.



Shown for illustration purposes only.
Do not operate without guards in place.

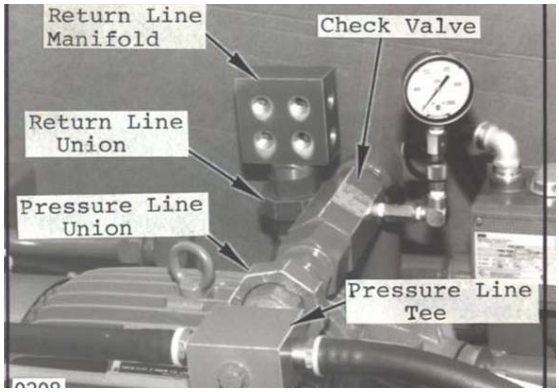
4. Turn on electric power. Start unit and check for hydraulic fluid leak at filter cover.

5. Check hydraulic fluid level in reservoir by liquid level sight gauge located on front side of reservoir. Fluid level should be even with high mark near top of sight gauge

4.5000 DRIVE - HYDRAULIC DRIVE UNIT

4.5202 Hydraulic Drive Unit - For maintenance accessibility when repairing or replacing the pump or motor, removal of the hydraulic drive unit from the frame is recommended.

Disassembly



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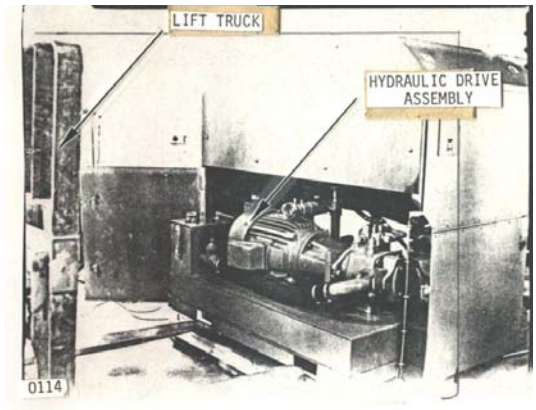
Do not operate without guards in place.



Shown for illustration purposes only.
Do not operate without guards in place.

1. SHUT-OFF AND LOCK-OUT ELECTRIC POWER to prevent accidental starting.

2. Remove upper front cover from drive compartment.

3. Open drive compartment front hinged door.

4. Remove four (4) .25-20 x .50 cap screws from center vertical brace of frame and remove brace.

5. Disconnect low voltage electrical power at junction box. (Control voltage)

6. Disconnect high voltage electrical power at drive motor. (Power voltage)

NOTE: Following two (2) steps require drain pan for waste fluid.

7. Disconnect union between return lines manifold and heat exchanger.

8. Disconnect union on pressure line between pressure tee and check valve.

9. Using lift truck, remove drive unit from frame.

Reassembly

1. Reverse procedure to reassemble.

NOTE: Vanmark recommends replacing hydraulic filter element after replacement of any components in hydraulic system.

4.5203 Hydraulic Pump (Removal)

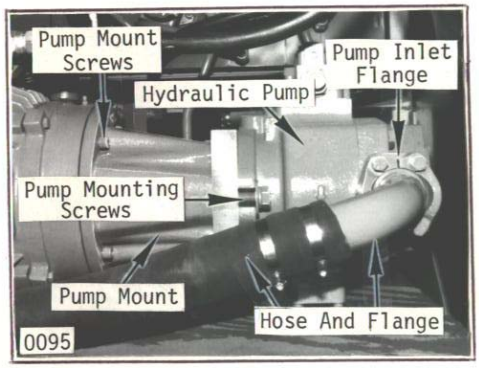
Disassembly

1. SHUT-OFF AND LOCK-OUT ELECTRIC POWER to prevent accidental starting.

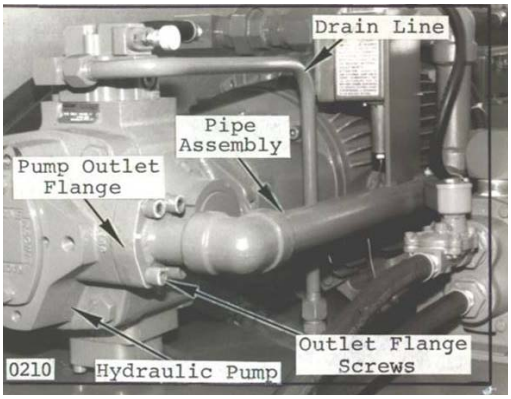
2. Remove hydraulic drive unit as described in Section 4.5202.

3. Drain hydraulic fluid from reservoir by removing .50 NPT plug from bottom side of reservoir. Provide drain pan to catch 60 gallons of fluid.

4. Remove pump drain line between pump and top of reservoir.



Shown for illustration purposes only.
Do not operate without guards in place.



Shown for illustration purposes only.
Do not operate without guards in place.

5. Remove four (4) .38-16 x 1.75 socket head screws and lock washers attaching pump outlet to outlet flange. Place outlet flange and welded pipe assembly to one side. Care should be taken to protect face of flange and replace ID O-ring seal. Provide drain pan to catch waste fluid.

6. Remove four (4) socket head screws and lock washers attaching pump inlet to inlet flange. Care should be taken to protect face of flange. Replace ID O-ring seal. Provide drain pan to catch waste fluid.

7. Remove four (4) .50-13 x 2.0 socket head screws and lock washers attaching flange to ` pump inlet flange. Provide drain pan to catch waste fluid.

NOTE: When only removing hydraulic pump to `electric motor Step 6 and 7 can be omitted, but Vanmark recommends completing these steps so that O-rings are replaced.

8. Place block under pump for support and remove two (2) cap screws, washers and lock washers retaining pump to pump mount.

9. Slide pump to right and remove. Care should be taken to protect inlet flange and .12 x 1.888 ID O-ring seal. Drive coupling insert will remain with either half of coupling when pump is removed.

10. Remove drive coupling from pump shaft.

4.5203 Hydraulic Pump Removal (Cont.)

Reassembly

1. Check coupling insert and replace if required.

2. To reassemble, place coupling insert on electric motor coupling half. Align lugs of hydraulic pump coupling half and insert and reverse disassembly procedures.

3. If drive coupling half is removed from hydraulic pump shaft, to reassemble see drive coupling reassembly Section 4.5204 for correct dimensions to locate coupling half on pump shaft.

4. Reverse procedure to reassemble.

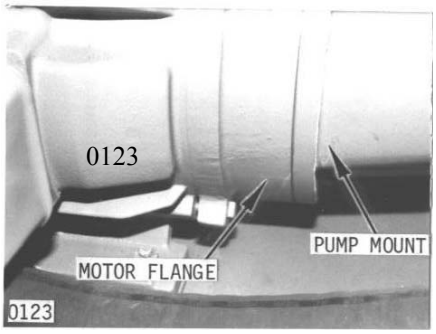
5. Turn on electric power. Start unit and check for fluid leaks.

6. Check hydraulic fluid level in reservoir by liquid level sight gauge located on LH side of reservoir. Fluid level should be even with high mark near top of sight gauge.

NOTE: Vanmark recommends replacing hydraulic filter element after replacement of any components in hydraulic system.

4.5204 Drive Coupling - Electric Motor to Hydraulic Pump

Disassembly



Shown for illustration purposes only.
Do not operate without guards in place.

1. SHUT-OFF AND LOCK-OUT ELECTRIC POWER to prevent accidental starting.

2. Remove hydraulic drive unit from frame. See Section 4.5202.

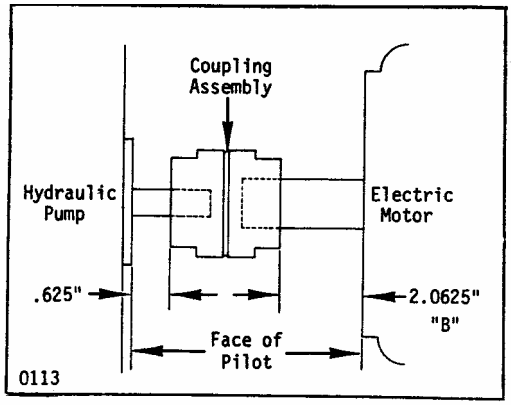
3. Remove pump. See Section 45203.

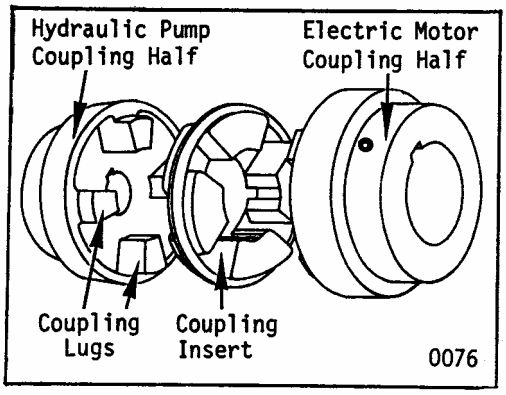
4. Remove four (4) socket head screws and lock washers retaining pump mount to electric motor.

5. Slide pump mount forward and remove mount from electric motor pilot flange.

6. Remove coupling half from hydraulic pump and electric motor drive shafts by loosening set screw and sliding coupling half off shafts.

Reassembly





1. Reassemble coupling half with key on hydraulic pump shaft with hub of coupling .625" from face of pilot on pump. Tighten set screw.

2. Reassemble drive coupling half with key on electric motor shaft with hub at approximate "B" dimension shown in illustration. DO NOT tighten set screw. Turn electric motor shaft so keyway is on top for easier access when tightening set screw in step 6.

3. Place drive coupling insert on coupling half previously installed on electric motor shaft.

4. Reassemble pump mount, with access hole on top, to electric motor with four (4) socket head screws and lock washers. Check that pump mount flange is completely seated on electric motor pilot flange when all screws are tight.

5. Align lugs of hydraulic pump coupling half with legs in insert. Reassemble hydraulic pump to pump mount with two (2) cap screws, washers and lock washers.

6. Slide electric motor coupling half "up snug" against insert and hydraulic pump coupling half. Tighten set screw in electric motor coupling half. Reinstall access plate on pump mount.

7. Reassemble balance of parts by reversing procedure as shown in hydraulic pump disassembly Section 4.5203.

4.5000 DRIVE - ELECTRIC MOTOR

4.5205 Electric Motor (Removing or Replacing)

Disassembly

1. SHUT-OFF AND LOCK-OUT ELECTRIC POWER to prevent accidental starting. Disconnect electrical connections from motor. Identify and mark for ease in reassembly.

2. Remove hydraulic drive unit from frame. See Section 4.5202.

3. Remove hydraulic pump. See Section 4.5203.

4. Remove four (4) cap screws and lock washers retaining electric motor base to mounting plate. Use lift eye on top of electric motor to lift motor and remove.

5. Remove four (4) socket head screws and lock washers retaining pump mount to electric motor.

6. Remove pump mount by sliding it away from electric motor.

7. Remove coupling half from electric motor drive shaft by loosening set screw and slide coupling half from shaft.

Reassembly

1. Reverse procedure to reassemble.

2. See Drive Coupling reassembly Section 4.5204 for correct dimension to reassemble coupling half on electric motor shaft.

3. Do not securely tighten electric motor mounting cap screws until hydraulic pump inlet flanges are aligned.

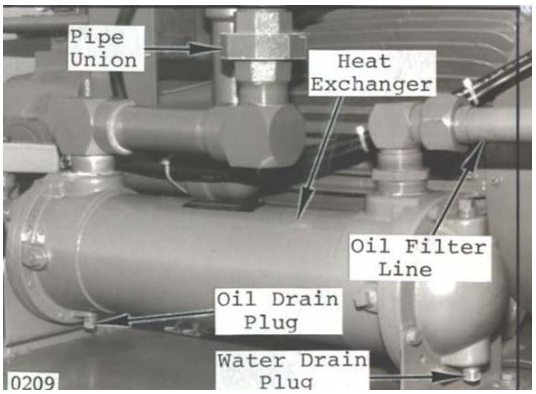
4.5000 DRIVE - HEAT EXCHANGER

4.5206 Heat Exchanger (Replacement)

Disassembly

1. SHUT-OFF AND LOCK-OUT ELECTRIC POWER to prevent accidental starting.

2. Shut-off water supply to heat exchanger water inlet.



Shown for illustration purposes only.
Do not operate without guards in place.

3. Remove .375 NPT plug to drain water from heat exchanger. Provide drain pan to catch water.

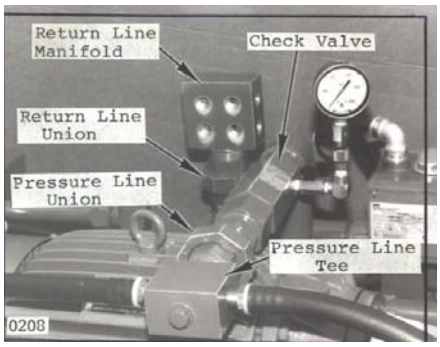
4. Remove .375 NPT plug to drain hydraulic fluid from heat exchanger and hoses. Provide drain pan to catch waste fluid.

5. Remove .75" NPT water inlet and outlet connections to heat exchanger.

6. Remove fluid line connecting heat exchanger to hydraulic filter. Remove elbow fitting on top of heat exchanger.

7. Disconnect union between heat exchanger and return manifold on top of heat exchanger.

8. Remove four (4) cap screws and lock washers retaining heat exchanger to reservoir mounting brackets and remove heat exchanger.



Shown for illustration purposes only.
Do not operate without guards in place.

Reassembly

1. Reverse procedure to reassemble.

2. Turn on electric power. Start unit and check for fluid leaks.

3. Turn on water supply to heat exchanger.

4. Check fluid level in reservoir by liquid level sight gauge located on LH side of reservoir. Fluid level should be even with high mark near top of sight gauge.

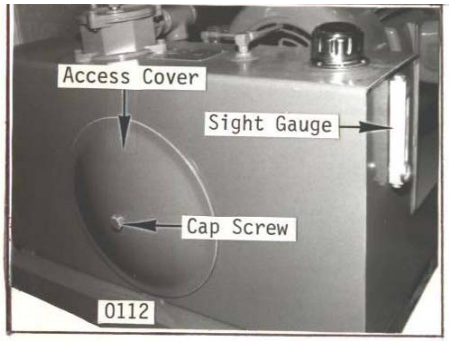
NOTE: Vanmark recommends replacing hydraulic filter element after replacement of any components in hydraulic system.

4.5000 DRIVE - SIGHT/FLUID TEMP GAUGE & FLOAT SWITCH

4.5207 Sight and Fluid Temperature Gauge (Replacement)

Disassembly

1. SHUT-OFF AND LOCK-OUT ELECTRIC POWER to prevent accidental starting.



Shown for illustration purposes only.
Do not operate without guards in place.

2. Drain hydraulic oil from reservoir by removing .50 NPT plug from bottom side of reservoir. Provide drain pan to catch 60 gallons of fluid.

3. Remove 14 inch access cover from side of reservoir by removing cap screw located in center of cover.

4. Reach through access hole in reservoir and remove two (2) hex nuts retaining sight and oil temperature gauge.

5. Remove sight gauge by pulling it away from outside wall of reservoir.

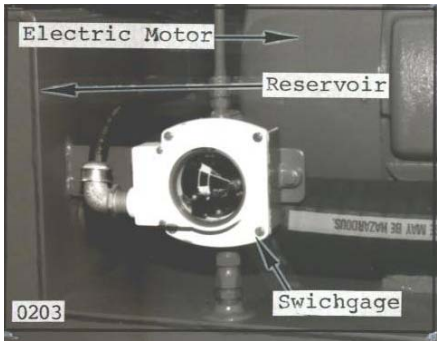
Reassembly

1. To reassemble, reverse procedure. Check that new O-ring seals are on new gauge before installing.

2. Turn on electric power. Start unit and check for hydraulic fluid leaks.

3. Check hydraulic fluid level in reservoir by liquid level sight gauge located on front side of reservoir. Fluid level should be even with high mark near top of sight gauge.

4.5208 Low Level Float Switch (Removal)



Shown for illustration purposes only.
Do not operate without guards in place.

Disassembly

1. SHUT-OFF AND LOCK-OUT ELECTRIC POWER to prevent accidental starting.

NOTE: Next two (2) steps require drain pan for waste fluid.

2. Loosen nut on upper tubing and remove tubing from connector at float switch.

3. Loosen nut on lower tubing and remove tubing from connector at float switch.

4. Remove float switch.

4.5208 Low Level Float Switch (Removal) (Cont.)

Reassembly

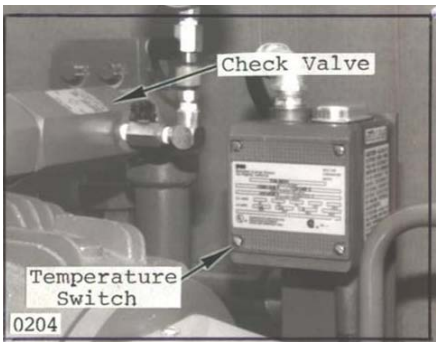
1. Remove connectors from old float switch and install in new float switch.

2. Reverse procedure to reassemble.

NOTE: Vanmark recommends replacing hydraulic filter element after replacement of any component in hydraulic system.

4.5209 Temperature Switch (Replacement)

Disassembly



Shown for illustration purposes only.
Do not operate without guards in place.

1. SHUT-OFF AND LOCK-OUT ELECTRIC POWER to prevent accidental starting.

2. Remove fluid temperature probe from reservoir.

3. Disconnect temperature switch wiring at junction box after checking that wires are marked.

4. Remove four (4) nuts from mounting screws and remove switch from bracket.

Reassembly

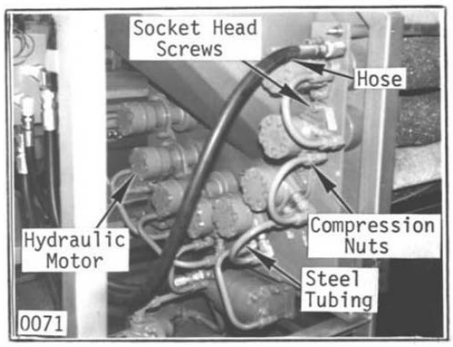
1. To reassemble, reverse procedure.

4.5000 DRIVE - HYDRAULIC MOTOR

4.5300 HYDRAULIC MOTOR MOUNTING PLATE ASSEMBLY

4.5301 Hydraulic Motors (Removal)

Disassembly



Shown for illustration purposes only.
Do not operate without guards in place.

1. SHUT-OFF AND LOCK-OUT ELECTRIC POWER to prevent accidental starting.

2. Loosen compression nuts and remove .625" hydraulic steel tubing connected to motor. Removal of .50" hydraulic hose may be required on some motors. Provide drain pan for waste fluid. Identify and mark hoses for ease in reassembly.

3. Remove two (2) socket head screws and lock washers retaining motor to mounting plate.

4. While supporting peeling bed roller, pull motor and drive coupling from end of roller. Roller end will rest in hole on firewall until new motor is installed.

5. See section 4.5204 for removal and installation of drive coupling on drive motor shaft.

Reassembly

1. Reverse procedure to reassemble.

2. Tighten socket head screws and lock washers to 80 ft/lbs.

3. Check end play of peeling roller when installing new motor and drive coupling.

4. Turn on electric power. Start unit and check for fluid leaks.

5. Check fluid level in reservoir by liquid level sight gauge located on front side of reservoir. Fluid level should be even with high mark near top of sight gauge.

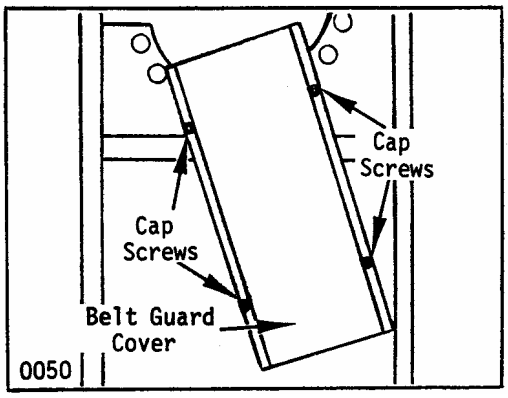
NOTE: Vanmark recommends replacing hydraulic filter element after replacement of any components in hydraulic system.

4.5000 DRIVE - MECHANICAL VARIABLE SPEED

4.5500 MECHANICAL VARIABLE SPEED DRIVE - There are several different procedures for servicing and repairing mechanical variable speed drive. To check or replace drive belt, belt guard cover is removed. Replacement of pulleys and bushings requires removal. To remove drive unit, drive belt, belt guard cover, pulleys and backplate are removed.

DO NOT remove belt guard while machine is operating.

4.5501 Belt Guard Cover Removal



Shown for illustration purposes only.
Do not operate without guards in place.

1. SHUT-OFF AND LOCK-OUT ELECTRICAL POWER to prevent accidental starting.

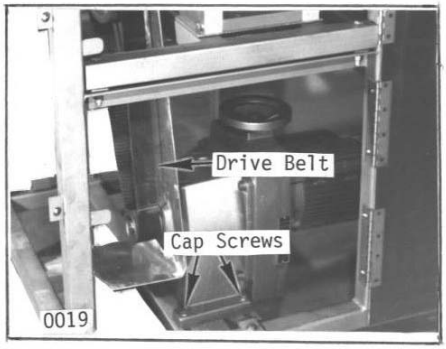
2. Loosen and remove four (4) .25-20x cap screws, nuts and lock washers.

3. Remove belt guard cover.

4. Reverse this procedure to reassemble.

4.5502 Replace Drive Belt

Disassembly



Shown for illustration purposes only.
Do not operate without guards in place.

1. SHUT-OFF AND LOCK-OUT ELECTRICAL POWER to prevent accidental starting.

2. Remove belt guard cover as described in Section 4.5501.

3. Loosen four (4) .50-13 x 2.00” cap screws.

4. Slide drive to left to loosen belt.

5. Remove belt.

Reassembly

1. Place belt on pulleys. Do not pry or otherwise force the belt onto the pulleys as this can result in permanent damage to the belt.

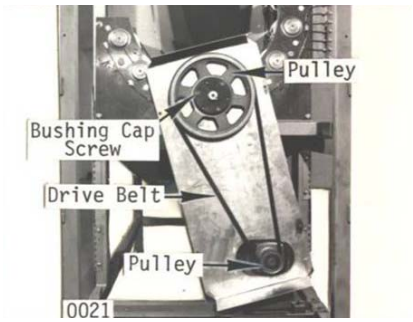
2. Slide drive to right to tighten belt. Belt should be installed with snug fit, neither too taut nor too loose.

3. Tighten four (4) .50-13 x 2.00” cap screws.

4. Replace belt guard cover as described in Section 4.5501.

4.5503 Replacement of Pulleys or Bushings

Disassembly



Shown for illustration purposes only.
Do not operate without guards in place.

1. SHUT-OFF AND LOCK-OUT ELECTRICAL POWER to prevent accidental starting.

2. Remove belt guard cover as described in Section 4.5401.

3. Remove belt as described in Section 4.5502.

4. Loosen and remove cap screws in bushing.

5. Insert cap screws in tapped removal holes and progressively tighten each one until pulley is loose on bushing.

6. Remove bushing from shaft.

7. Remove pulley from shaft.

Reassembly

1. Thoroughly inspect bore of mating part and tapered surface of bushing. Any paint, dirt, oil or grease must be removed.

NOTE: Do not use lubricants.

2. Insert bushing into pulley.

3. Loosely insert cap screws into bushing and pulley.

4. With key in keyseat of shaft, slide assembly onto shaft. If it is difficult to slide bushing onto shaft, wedge screwdriver blade into saw cut to overcome tightness.

5. Position the assembly on shaft so belt will be in alignment when installed. To align, place a straightedge against outside edge of pulleys. Move pulleys until straightedge touches two (2) outside and two (2) inside edges of pulleys. (Straightedge should cross pulleys as near shafts as possible.)

4.5503 Replacement of Pulleys or Bushings (Cont.)

Reassembly (Cont.)

6. Tighten cap screws evenly and progressively until obtaining correct torque.

Part Number	Description	Value	Ft. Lbs. to Apply with Torque Wrench	Wrench Length (Inches)	Wrench Pull (Lbs.)
41279-03-1	Bushing - Pulley Hub - 1.19 Bore		30	6	60

There must be a gap between bushing flange and mating hub when installation is complete.

7. Replace drive belt as described in Section 4.5502.

8. Replace belt guard cover as described in Section 4.5501.

4.5504 Drive Removal

1. SHUT-OFF AND LOCK-OUT ELECTRICAL POWER to prevent accidental starting.

2. Remove belt guard cover as described in Section 4.5501.

3. Remove drive belt as described in Section 4.5502.

4. Remove pulleys as described in Section 4.5503.

5. Remove belt guard backplate and stand off.

6. Remove four (4) cap screws that mount drive to stiffeners and remove drive unit from motor mount.

7. Reverse this procedure to reassemble.

4.5000 DRIVE - DRIVE CASE

4.5600 SINGLE MOTOR AND MECHANICAL VARIABLE SPEED DRIVE CASE - Repair of components is possible without removal of entire drive case unit from machine. Major repair is more easily accomplished with entire unit removed from machine.

4.5601 Drive Case Removal

1. SHUT-OFF AND LOCK-OUT ELECTRIC POWER to prevent accidental starting.

2. Remove all peeling rollers. See Section 4.4100.

3. Remove right and left hand top covers on each side of inlet chute and front cover/door for easier access to drive case.

4. Disconnect hydraulic motor drive coupling and remove torque arm. See Section 4.5401.

5. Mark location of drive case on drive case mount for ease in reassembly.

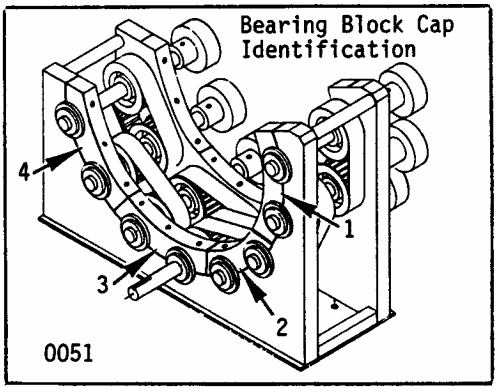
6. Remove four (4) cap screws, lock washer, washers and nuts retaining drive case to drive case mount. Slide LH (shorter) end of drive case forward so drive case and roller drive couplings clear inlet chute. Slide complete drive case out RH side of machine. Any parts from grease bank system can be removed without removal of drive case assembly from machine.

Installation

1. To reinstall, reverse procedure.

4.5602 Drive Shaft Removal - Design of drive case makes it necessary to remove bearing block caps adjacent to particular drive case shaft needing service. This is required to eliminate stress or stretching of drive belts when reassembled.

Disassembly



1. Identify and mark all bearing caps to be removed. They must be reassembled in original position as they are not interchangeable or reversible.

2. Remove cap screws, lock washers and washers retaining block bearing caps. Repeat procedure for remaining caps to be removed.

3. Tap gently to loosen block caps. Remove outboard caps first, if all caps are being removed. Any single bearing cap can be removed individually without removing others.

IMPORTANT: Bearing block caps can be removed only by sliding cap in horizontal motion outward from center of drive case.

4.5602 Drive Shaft Removal (Cont.)

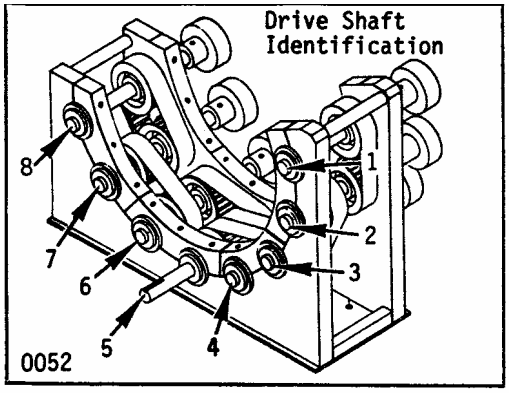
4. With bearing cap removed, lift drive case shaft upward until bearing clears main block body. Slightly tilt shaft from its centerline, while rotating to remove shaft from drive belts. Repeat procedure for remaining shafts to be removed.

5. For removal of drive coupling from drive shaft see Section 4.5100.

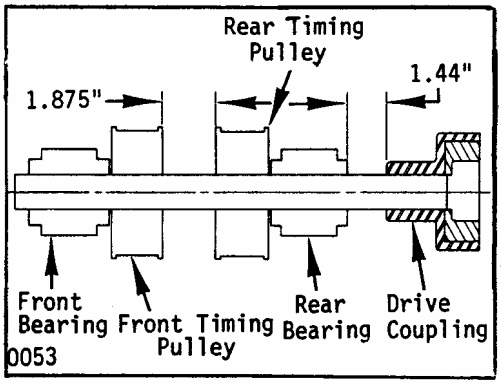
6. Remove bearings from shaft by loosening four (4) set screws on each bearing and slide bearing from shaft.

7. Loosen two (2) set screws in each timing pulley and remove from shaft using gear puller or press.

Reassembly - For clarity in reassembly, uppermost drive shaft hole is on your right and is designated shaft No. 1, second one down is 2, etc. On units with 6 rollers, shafts No. 1 and 8 are not used.



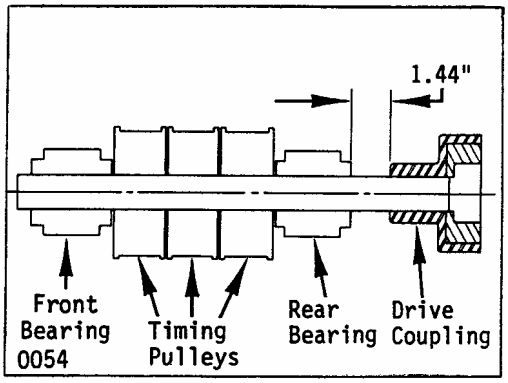
1. For reassembly of drive couplings on drive shafts, see Section 4.5100.



2. Install rear bearing on all shafts 1.44” from front edge of drive coupling. Tighten four (4) socket head (Allen type) set screws in each bearing.

3. Install rear timing pulley on all shafts against front face of rear bearing. Tighten two (2) set screws in each pulley.

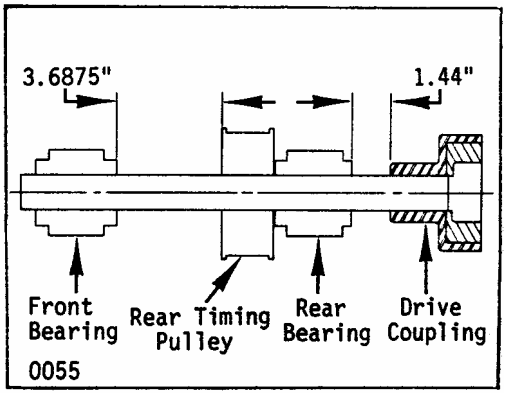
4. Install front timing pulley on shafts No. 2, 3, 6 and 7 with a distance of 1.875 between pulleys. Tighten two (2) set screws in each pulley.



5. Install three timing pulleys on shafts No. 4 and 5 so that they butt against each other and against face of rear bearing. Tighten two (2) set screws in each pulley.

6. Install front bearings on shafts No. 2 through 7 against front timing pulleys. Do not tighten bearing set screws at this time.

4.5602 Drive Shaft Removal (Cont.)



7. Install front bearing on shafts No. 1 and 8 with a distance of 3.6875” from rear timing pulley. DO NOT tighten bearing set screws at this time.

8. See Section 4.5603 for reassembly of bearing blocks before installing drive shafts.

9. Place three (3) belts on No. 5 drive shaft (longest) and lay shaft and belts into drive case with bearings nested in recess of bearing blocks.

NOTE: Two (2) belts drive No. 4 shaft from main or No. 5 drive shaft.

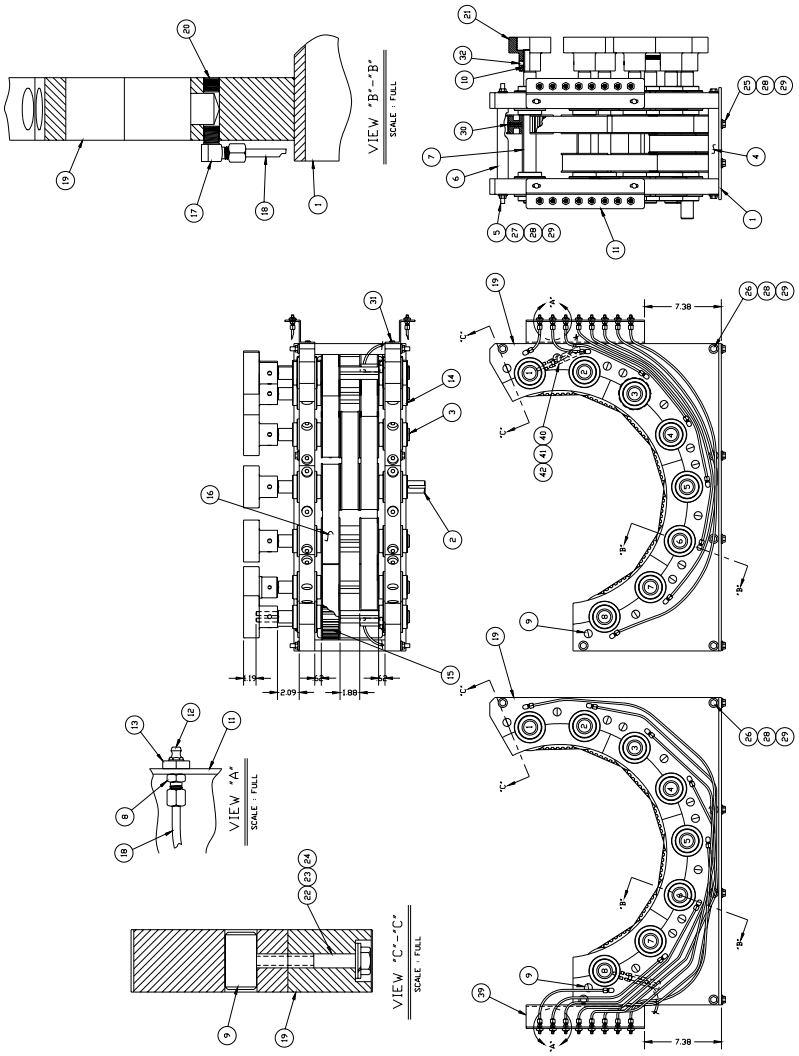
Work other shafts and their belts into position by threading and rotating them through belts from previously installed shaft. During this process, square insert of drive coupling must be aligned so sides of square insert are in a vertical and horizontal position. Install each shaft with drive coupling in this position so drive rollers will be “in time” with each other. Shaft No. 1 (uppermost) is last to be installed.

10. Install bearing block caps with three (3) cap screws, lock washers and washers and tighten finger tight. Proceed until all bearing caps are installed in this manner.

11. When all shafts are in place, bearing block caps installed with cap screws finger tight, rotate main drive shaft by hand. All belts must be seated on timing pulleys properly and rotate freely. Do not force or pry on timing belts during reassembly procedure.

12. Tighten cap screws in each bearing cap in sequence by starting with middle cap screw, then each outside one. Tighten 1/4 turn at a time. Tighten cap screws equally and securely on each cap. Proceed around entire case in this manner. Tighten set screws in all front bearings. Again rotate main drive shaft by hand to insure freedom of rotation.

4.5603 Bearing Block Removal



4.5603 Bearing Block Removal (Cont.) - Drive case bearing blocks (20) can be replaced individually or as a pair.

1. See Section 4.5601 for drive case removal and Section 4.5602 for drive shaft removal.

2. Remove brass nut from each elbow (17). Remove elbows (17).

3. Leave nylon grease tubes (18) connected to fittings on grease bank mount. Remove grease bank assembly intact.

4. Remove two (2) connector rods (5) and round connectors (6) from upper portion of bearing blocks and eight (8) cap screws (26) retaining bearing blocks to square connectors (4) and remove bearing block (19).

5. Remove bearing blocks plugs (9) and .125 NPT flush plugs (20) from inner side of each bearing block.

Reassembly - For clarity in reassembly, No. 1 drive shaft is to your right, bearing block closest to you is front half, bearing block away from you is rear half.

1. To reassemble, reverse procedure. Reinstall .125 flush plugs (20) on rear side of front half and front side of rear half. Reinstall bearing block plugs (9) with alignment slots accessible from front side of front half and rear side of rear half.

2. Align bearing blocks (19) with square connectors (4) and reinstall eight (8) cap screws (26), lock washers (28) and washers (29). Do not tighten at this time.

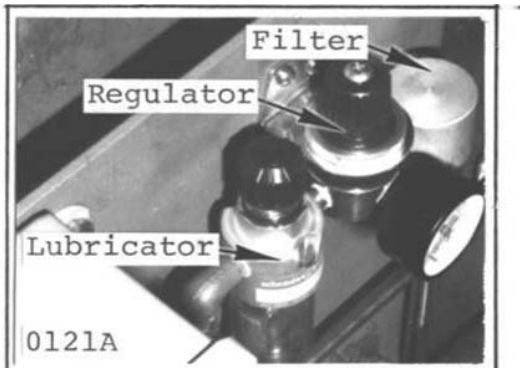
3. Install bearing blocks (19) to drive case base (1) so that centerline of bearing holes are exactly perpendicular with each other and bearing blocks are centered on drive case base. When alignment is correct, tighten eight (8) cap screws (26) mounting bearing blocks (19) to connectors (4).

4. Reinstall two (2) connector rods (5) and round connectors (6) to upper portion of bearing blocks.

5. Reinstall elbows (17) on bearing blocks and reconnect grease bank lines. Locate holes for grease bank bracket by taking dimensions from old bearing block. Drill .1875 hole, .625 deep and tap .25-20 threads in each hole. Remount grease bank bracket (11) and their components in order removed. Replace cracked or broken grease lines.

4.6000 AUTOMATIC LUBE SYSTEM

4.6100 AIR SET



Air set consists of filter, regulator and lubricator. These components require cleaning and filling.

4.6101 Cleaning Filter - To maintain maximum filtering efficiency and to avoid excessive pressure drop the filter must be kept clean. A visible coating of dirt or condensate on filter element or an excessive pressure drop indicates cleaning is necessary.

Disassembly

1. Shut off air supply.

2. Turn drain valve to drain off any bowl accumulation before it reaches level of lower baffle.

3. Remove bowl of filter.

4. Wash filter element in white kerosene and blow out body with compressed air.

5. Clean bowl with household soap or white kerosene.

Reassembly

1. To reassemble, reverse procedure.

4.6102 Cleaning Regulator - If air supply is kept clean regulator should provide long periods of uninterrupted service. Erratic regulator operation or loss of regulation is most always due to dirt in disc area.

Disassembly

1. Shut off air supply.

2. Remove air lines from each side.

3. Remove pressure gauge.

4. Remove air filter and lubricator.

5. Remove screw and knob from top of regulator.

6. Remove spring gauge.

4.6102 Cleaning Regulator (Cont.)

7. Remove diaphragm, spring and adjusting screw assembly from spring gauge.

8. Clean parts with white kerosene and blow out body with compressed air.

Reassembly

1. To reassemble, reverse procedure.

NOTE: Make sure seat is firmly in place and that valve assembly fits into center hole of diaphragm assembly.

2. If diaphragm assembly is replaced, make sure valve stem fits into its center hole and tighten bonnet slightly more than hand tight (up to 60 inch lbs. torque).

4.6103 Cleaning Lubricator - If air and oil are kept clean and the oil level never allowed below end of dip tube, the lubricator should provide long periods of unattended service. If the oil drip rate diminishes or requires continual readjustment, clean lubricator.

1. Shut off air supply.

2. Remove bowl and apply compressed air to lower end of dip tube to make sure that oil delivery system is free and clear of impediment.

3. Wash any parts requiring cleaning with white kerosene and reassemble unit.

NOTE: Clean bowl only with household soap or white kerosene.

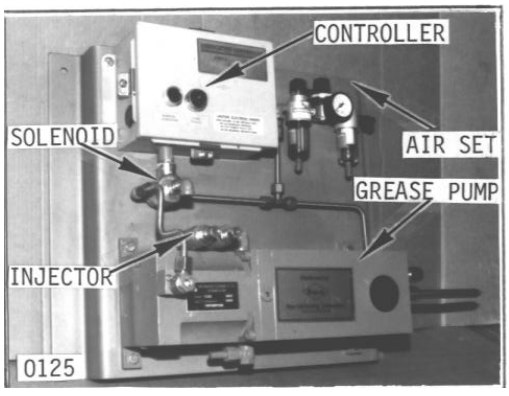
4.6104 Filling Lubricator

1. To fill, shut off air supply.

2. Remove either of two (2) fill plugs.

3. Fill with oil (see specifications 1.2302) to within .25" of top of bowl.

4.6200 Pump - Filling Grease tank

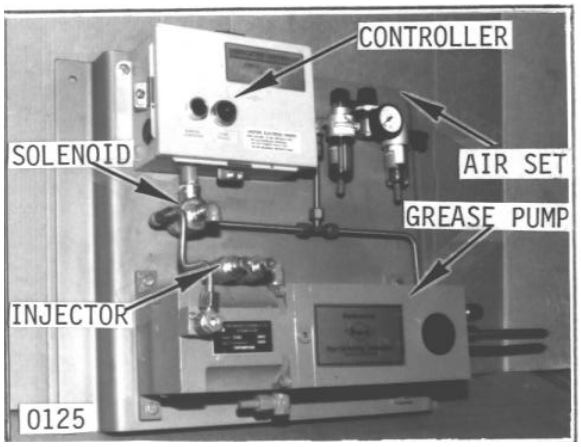


1. Grease tank is filled with a grease nipple in piston rod.

2. Piston rod permits visual checking of tank contents. Rod moves out of tank during filling process. When maximum filling volume is exceeded, surplus grease will leak at pressure relief valve.

4.6300 Cleaning Injector - If injector does not work even though main feed line is satisfactorily pressurized and pressure is then released again, then first check whether system has been bled. If it has, clean injector.

Disassembly



1. Shut off air supply.

2. Remove injector unit.

3. Remove metering screw on top of injector.

4. Remove spring.

5. Wash all parts in white kerosene, check them and lubricate them.

6. Replace any parts or seals that are damaged.

Reassembly

1. To reassemble, reverse steps 1 through 4 of disassembly.

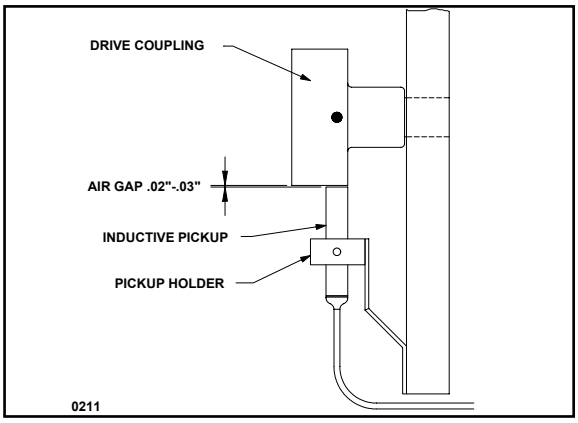
4.7000 TACHOMETER SYSTEM

4.7100 INDUCTIVE PICKUP - ROLLER AND DISCHARGE AUGER

Roller Inductive Pickup is located on No. 7 Roller Drive Coupling.
Auger Discharge Pickup is located on rear end of Discharge Auger Shaft.

4.7101 Replacement of Roller Inductive Pickup.

Disassembly



1. SHUT-OFF AND LOCK-OUT ELECTRIC POWER to prevent accidental start.

2. Fold down drive compartment side door for access to tachometer display cover.

3. Unscrew inductive pickup connector from tachometer enclosure.

4. Loosen set screw on pickup holder and remove pickup from holder.

Reassembly

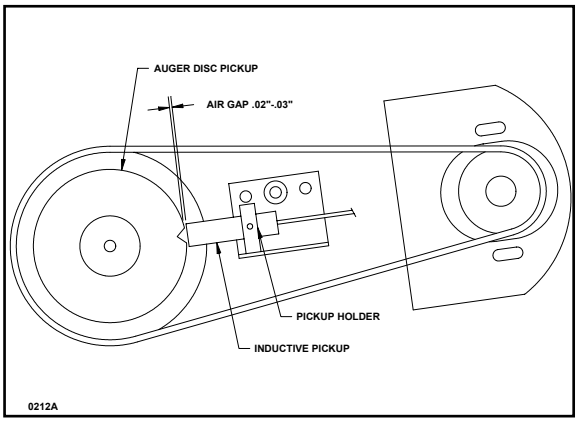
1. To reassemble, reverse procedure.

2. Air gap dimension of .02"-.03" is very important for display unit to operate correctly.

3. Complete wiring diagram of tachometer can be found in Section 7.4100.

4.7102 Replacement of Discharge Auger Inductive Pickup

Disassembly



Shown for illustration purposes only.
Do not operate without guards in place.

1. SHUT-OFF AND LOCK-OUT ELECTRIC POWER to prevent accidental start.

2. Remove auger discharge front chain cover.

3. Fold down drive compartment side door for access to tachometer display cover.

4. Unscrew inductive pickup connector from tachometer enclosure.

5. Loosen set screw on pickup holder and remove pickup from holder.

4.7102 Replacement of Discharge Auger Inductive Pickup (Cont.)

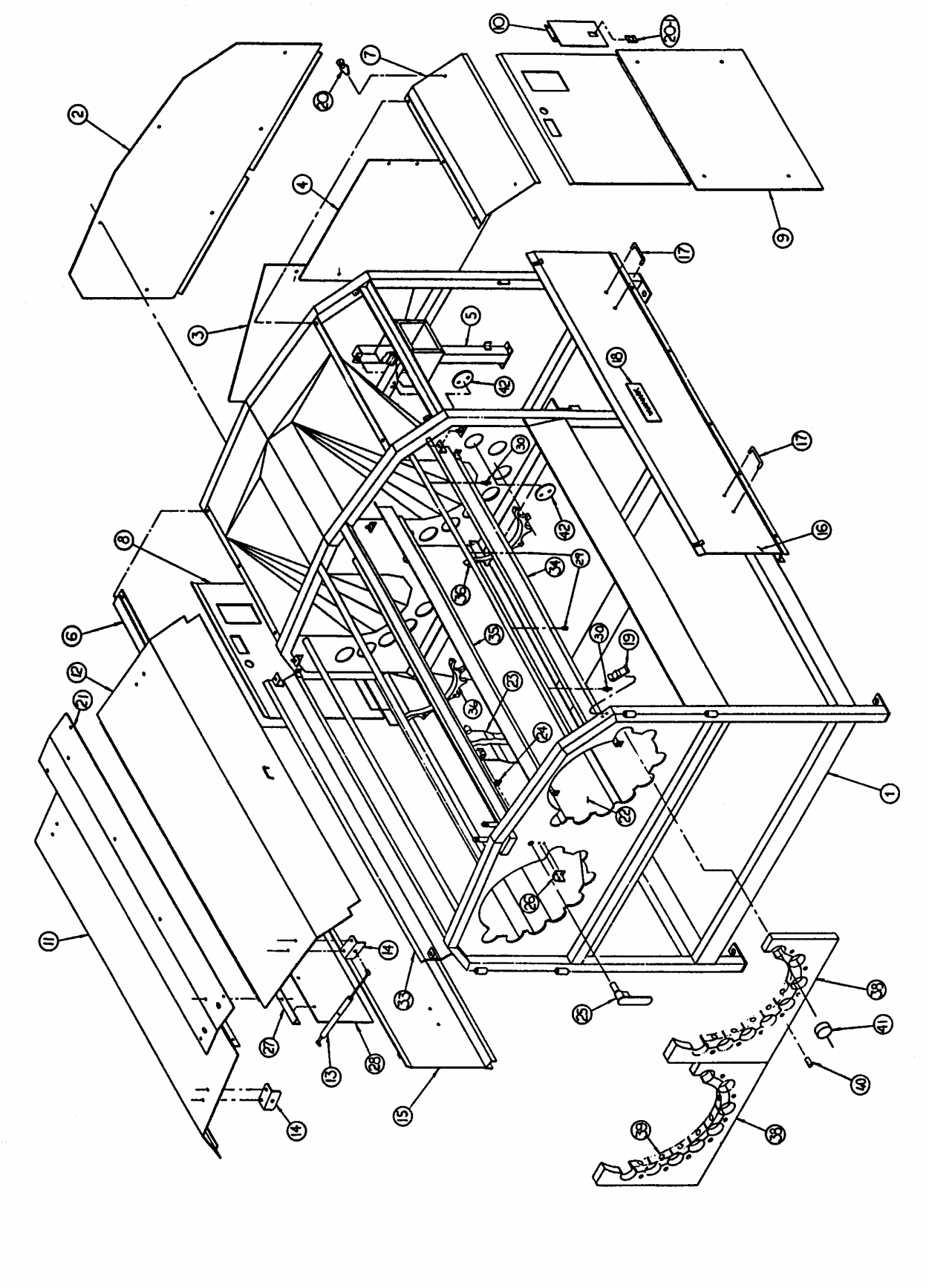
Reassembly

1. To reassemble, reverse procedure.

2. Air gap dimension of .02"-.03" is very important for display unit to operate correctly.

3. Complete wiring diagram of tachometer can be found in Section 7.4100.

5.1000 MAIN FRAME AND COVERS

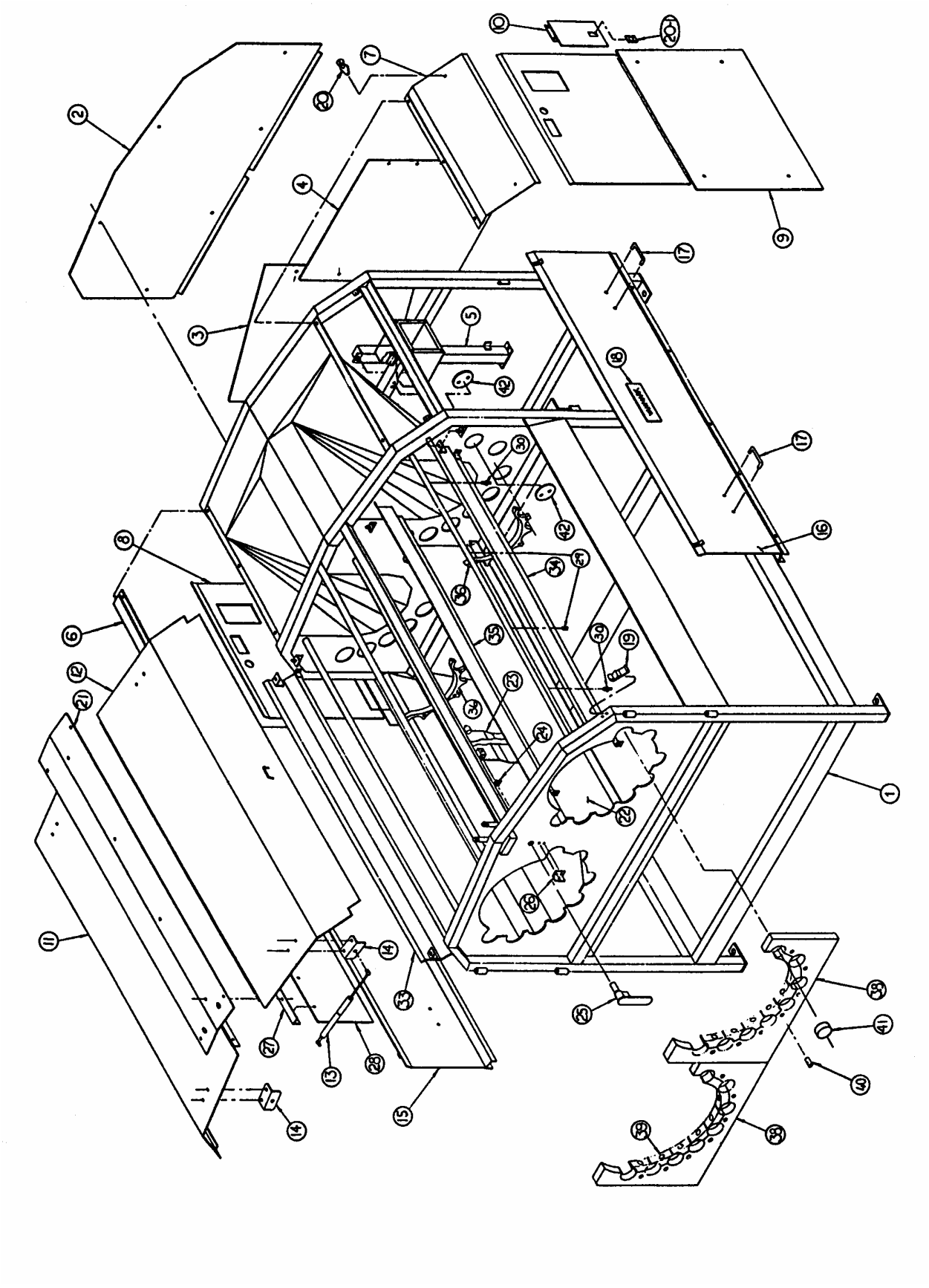


5.1000 MAIN FRAME AND COVERS

Ref. No.	Part Number	No. Req.	Description
1	21124-01-5	1	FRAME ASSEMBLY
2	34149-01-5	1	PANEL - Drive Compartment - Front Upper
3	35942-01-5	1	DOOR - Drive Compartment - Front Lower - RH
4	34150-02-5	1	DOOR - Drive Compartment - Front Lower - LH
5	21121-01-5	1	WELDMENT - Door Latch - Front Lower Doors
6	21137-02-5	1	LID - Drive Compartment - RH
7	21137-01-5	1	LID - Drive Compartment - LH
8	21138-02-5	1	DOOR - Drive Compartment - Side RH
9	21138-01-5	1	DOOR - Drive Compartment - Side LH
10	21212-02-5	2	DOOR - Access Panel
	48292-01-5	4	Screw - Machine, Flat Hd. Sltd., No. 10-32 x .62, LW and N
11	21140-02-5	1	LID - Peeling Chamber - RH
12	21140-01-5	1	LID - Peeling Chamber - LH
13	41587-01-9	4	GAS SPRING - Lid Opener
	48038-01-5	4	Nut, .31-18 Lock
	48064-01-5	4	Lock Washer, .375
14	34309-01-5	4	ANGLE - Gas Spring Mounting
	48001-01-5	8	Cap Screw, .25-20 x .75
	48010-01-5	8	Lock Nut, .25
15	21139-02-5	1	COVER - Side - Peeling Chamber - RH
16	21139-01-5	1	COVER - Side - Peeling Chamber - LH
17	41124-01-5	6	HANDLE - Side Covers
	48146-01-5	12	Screw, Sltd. Hd., No. 10-32 x .50 and LW
18	40476-01-9	2	LEGEND - Vanmark - Side Covers
19	42797-01-5	4	LATCH - Top and Side Chamber Covers
20	41262-01-9	8	LATCH - Doors and Lids - Knurled Knob
20-1	41759-01-5	2	LATCH - Access Doors - Pull Handle
21	34151-01-5	1	COVER - Top - Peeling Chamber
	48137-01-5	32	Screw, Machine, Truss Sltd. Hd., .25-20 x .50, LW and N
23	21142-01-5	1	BAFFLE - Between Chambers (Metal) - 16 Roll
23	21142-02-5	1	BAFFLE - Between Chambers (Metal) - 12 Roll
24	34155-01-5	1	SPACER - Baffle - .31 Thick
25	21141-01-5	1	HANDLE - Chamber Baffle
	48001-01-5	1	Cap Screw, .25-20 x .75 and LW
26	34157-01-5	1	BRACKET - Baffle Handle Stop
27	34842-01-5	1	ANGLE - Product Guard
28	34843-01-9	2	GUARD - Product
	40119-01-9	36	*SPRAY NOZZLES - with .75 NPT Spray Tube
29	42195-03-9	4	#SPRAY NOZZLES - Full with 1.00 NPT Spray Tube - Center
30	42477-02-9	4	#SPRAY NOZZLES - Vee with 1.00 NPT Spray Tube - Front & Rear
	41070-01-1	2	*ELBOW - Pipe - .75 NPT

LW - Lock Washer, N - Nut

5.1000 MAIN FRAME AND COVERS

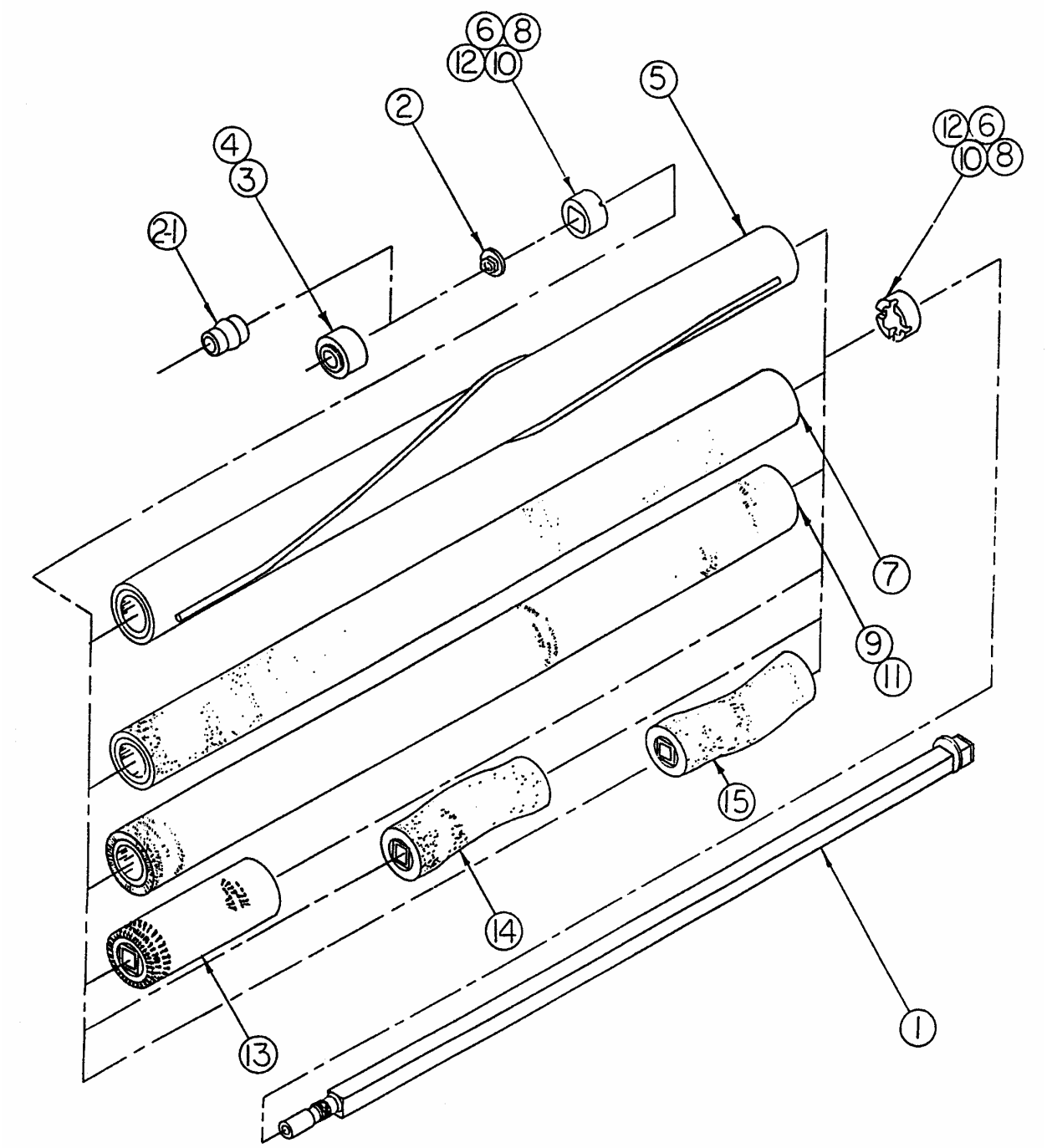


5.1000 MAIN FRAME AND COVERS

Ref. No.	Part Number	No. Req.	Description
33	20975-01-5	1	**SPLASH GUARD - RH - RH Chamber - 16 Roll
	48000-01-5	2	Cap Screw, .25-20 x .50, W and LW
	48062-01-5	4	Nut, .38-24
	48065-01-5	4	Washer, .38
34	20976-01-5	1	**SPLASH GUARD - LH - LH Chamber - 16 Roll
			Hardware Same as 20975-01-5
35	21294-01-5	1	**SPLASH GUARD - RH - LH Chamber - 16 Roll
			Hardware Same as 20975-01-5
33	23068-01-5	1	##SPLASH GUARD - RH - RH Chamber - 16 Roll
	23068-02-5	1	##SPLASH GUARD - RH - RH Chamber - 12 Roll
	48048-01-5	2	Cap Screw, .38-16 x .75, W and LW
	48102-01-5	4	Nut, .50-13
34	23273-01-5	1	##SPLASH GUARD - LH - LH Chamber - 16 Roll
	23273-02-5	1	##SPLA SH GUARD - LH - LH Chamber - 12 Roll
			Hardware Same as 23068-01-5
35	23312-01-5	1	##SPLASH GUARD - RH - LH Chamber - 16 Roll
	23312-02-5	1	##SPLASH GUARD - RH - LH Chamber - 12 Roll
			Hardware Same as 23068-01-5
36	41431-01-9	2	PRODUCT PROTECTOR - Inlet End
	48204-01-5	8	Screw, Rd. Hd. Sltd., No. 10-32 x 1.75, W, LW and N
38	41750-01-9	2	BEARING BLOCK - Discharge End
	48053-01-5	12	Cap Screw, .38-16 x 2.00 and LW
39	41748-01-9	14	BEARING BLOCK - Upper - Nitrile
	48027-01-5	14	Cap Screw .31-18 x 3, W and LW
39	42998-01-9	14	BEARING BLOCK - Upper - Nitrile - with Finger Product Protector
39	39001-01-9	14	BEARING BLOCK - Upper - Nitrile - with Natural Flow Gate
40	32171-01-9	14	PLUG - Bearing Block - Tapped .31-18
41	34908-01-9	4	PLUG - Bearing Block - 12 Roll
42	34840-01-5	8	PLATE - Cover - Firewall - 12 Roll
	48001-01-5	8	Cap Screw, .25-20 x .75 and N

*To Serial No. M28** - 103191
#Serial No. M28** - 110191 and after
To Serial No. M28-123190
##Serial No. M28**-010191 and after

5.2000 PEELING ROLLS

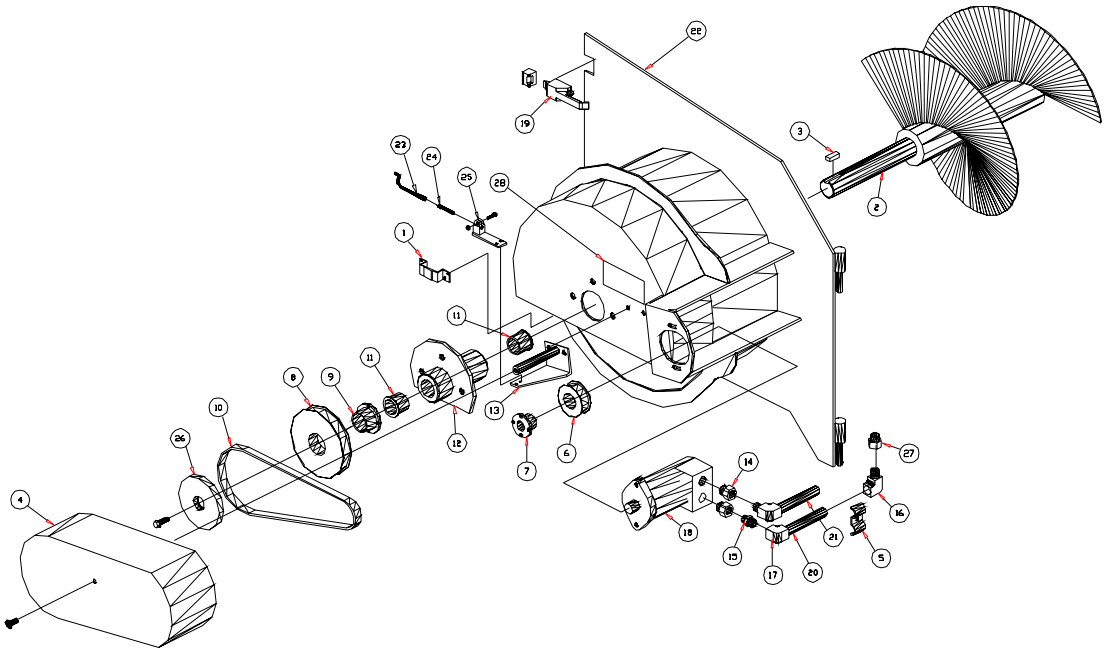


5.2000 PEELING ROLLS

Ref. No.	Part Number	No. Req.	Description
1	20779-01-5	6, 8	SHAFT - Peeling Roll
2	20249-01-1	6, 8	NUT ASSEMBLY
2-1	31126-01-9	Req.	SOCKET - Nut Assembly
3	40316-01-9	6, 8	BEARING - Peeling Roll w/Inner Seal - 100
4	41383-01-9	Req.	SEAL - V-Ring - 2 Per Bearing (40316)
5	20750-02-5	Req.	ROLL - Smooth
5	20750-01-5	Req.	ROLL - Lift - LH - 4.50 OD
5	29336-01-5	Req.	ROLL - Lift - Abr - #10 Grit
5	29336-02-5	Req.	ROLL - Lift - Abr - #20 Grit
5	29336-03-5	Req.	ROLL - Lift - Abr - #36 Grit
5	29337-01-5	Req.	ROLL - Lift - Abr - .50- #10 & .50- #20
6	32485-01-9	Req.	ROLL - Lift End Fixture - 2 Per Roll
7	29252-02-1	Req.	ROLL - Abr - .50- #10 & .50- #20 Grit - 4.75 OD
7	29252-04-1	Req.	ROLL - Abr - .75- #10 & .25- #20 Grit - 4.75 OD
7	29316-02-1	Req.	ROLL - Abr - #10 - 4.75 OD
7	29316-01-1	Req.	ROLL - Abr - #20 - 4.75 OD
7	29252-03-1	Req.	ROLL - Abr - .50- #36 & .50- #60 Grit - 5.00 OD
7	29252-05-1	Req.	ROLL - Abr - .50- #60 & .50- #80 Grit - 5.00 OD
7	29207-01-1	Req.	ROLL - Abr - #20 Grit - 5.00 OD
7	29207-05-1	Req.	ROLL - Abr - #30 Grit - 5.00 OD
7	29207-02-1	Req.	ROLL - Abr - #36 Grit - 5.00 OD
7	29207-03-1	Req.	ROLL - Abr - #60 Grit - 5.00 OD
7	29207-06-1	Req.	ROLL - Abr - #80 Grit - 5.00 OD
7	29319-01-1	Req.	ROLL - Abr - .67-#20 Grit & .33-#36 Grit - 5.00 OD
8	41129-01-9	Req.	ROLL - Abr End Fixture - 2 Per Roll
9	42985-01-9	Req.	BRUSH - .012 - Black
9	41329-02-9	Req.	BRUSH - .014 - Black
9	40261-03-9	Req.	BRUSH - .022 - Natural Bristles w/Black Ring
9	40260-02-9	Req.	BRUSH - .045
9	40347-03-9	Req.	BRUSH - Nylon - .022/.036 60-40
9	43034-01-9	Req.	BRUSH - Abr Tynex A - .022 - #120 Epoxy Filled
10	40259-02-9	Req.	BRUSH - End Fixture - 2 Per Roll
11	41566-01-9	Req.	BRUSH - .022 - Random Trim - 3.12 ID
11	42699-01-9	Req.	BRUSH - Abr Tynex A - .040 - #120 - 3.12 ID
12	33740-01-9	Req.	BRUSH - 3.12 ID End Fixture - 2 Per Roll
13	40369-01-9	Req.	SEGMENT - Pintle Straight Rbr - 5 Per Roll
13	40369-02-9	Req.	SEGMENT - Pintle Straight Ntrl - 5 Per Roll
13	40242-01-9	Req.	SEGMENT - Pintle Sine RH Rbr - 5 Per Roll
14	32118-01-5	Req.	SPACER - Pintle 3.00 OD x 1.44 - 4 Per Roll
15	31990-01-9	Req.	SEGMENT - Abr Sine - LH - #10 - 5 Per Roll
15	31156-01-9	Req.	SEGMENT - Abr Sine - LH - #20 - 5 Per Roll
15	33658-01-9	Req.	SEGMENT - Abr Sine - LH - #36 - 5 Per Roll
16	31991-01-9	Req.	SEGMENT - Abr Sine - RH - #10 - 5 Per Roll
16	31157-01-9	Req.	SEGMENT - Abr Sine - RH - #20 - 5 Per Roll
16	33659-01-9	Req.	SEGMENT - Abr Sine - RH - #36 - 5 Per Roll

LW - Lock Washer, N - Nut

5.3000 AUGER DISCHARGE

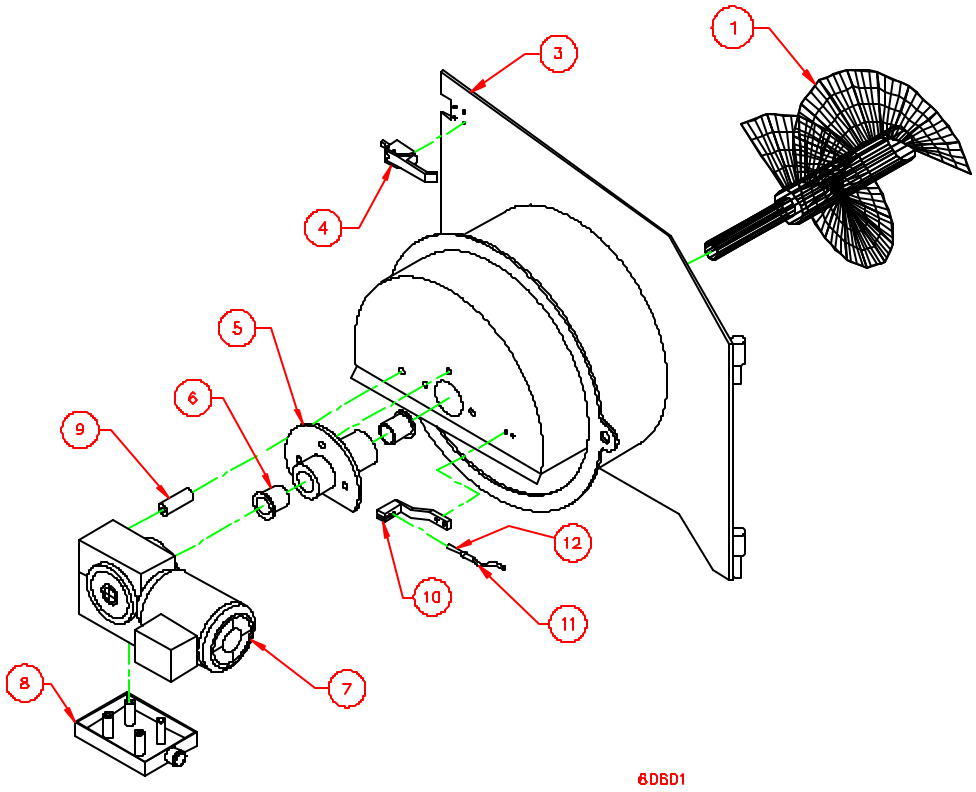


5.3000 AUGER DISCHARGE

Ref. No.	Part Number	No. Req.	Description
1	21312-01-5	2	BRACKET - Discharge Drum Latch Switch - Lower
	48049-01-5	4	Cap Screw, .375-16 x 1.0 and LW
2	59090-02-5	2	AUGER ASSEMBLY - Hardened To Serial No. M28** - 100799
2	59090-03-5	2	AUGER ASSEMBLY - Hardened Serial No. M28** - 100899 and after
3	34185-14-1	2	KEY - Auger Drive .375 sq. x 1.25 Long
4	24272-01-5	1	SHIELD - Belt LH
	24272-02-5	1	SHIELD - Belt RH
5	34318-01-5	6	CLIP - Double - Return Hydraulic Hoses
	48138-01-5	6	Screw, Machine, Truss Sltd Hd, .25-20 x .75
	48010-01-5	6	Lock Nut, .25-20
6	41366-12-9	2	PULLEY - Drive - 28 Teeth
7	43101-02-9	2	BUSHING - Drive Pulley
8	42246-02-1	2	BUSHING - Driven Pulley
9	41366-13-9	2	PULLEY - Driven - 64 Teeth
10	41367-11-9	2	BELTED HTD - Auger Drive
11	43231-02-9	4	BEARING SLEEVE - Auger - 1.75 O.D. (Color: Yellow)
12	24273-01-5	2	HOUSING - Auger Shaft
13	24274-01-5	2	MOUNT - Tach Pickup
14	40500-01-1	4	ADAPTER - .50 FPT x No. 10 - On Motor
15	41034-01-1	2	NIPPLE - Close - .50 NPT
16	41048-01-1	2	ELBOW - Street - .50 NPT
17	41068-01-1	2	ELBOW - .50 NPT On Motor
18	41621-01-9	2	MOTOR - Hydraulic - Auger Drive - 6.2 cu. in.
	48051-01-5	4	Cap Screw, .375-16 x 1.50, LW and N
19	41354-01-9	4	LATCH - Discharge Drum - Southco
	48292-01-5	8	Screw Machine, Flt Hd, No. 10-32 x .65
	48346-01-5	4	Screw Machine, Hex Hd, No. 10-32 x .75 and LW
20	29345-16-9	2	HOSE - Hydraulic - .50 x 144.88 - Pressure
21	29345-17-9	2	HOSE - Hydraulic - .50 x 139.88 - Return
22	24317-01-5	1	DISCHARGE DRUM ASSEMBLY - LH
	24317-02-5	1	DISCHARGE DRUM ASSEMBLY - RH
23	24819-01-5	2	HOLDER - Inductive Pickup
24	43450-01-9	2	SENSOR - Proximity (Inductive Pickup)
25	37636-01-5	2	SPACER - Round
	48049-01-5	2	Cap Screw .38-16 x 1.00
26	38683-01-5	2	GEAR - Pickup - For Auger
27	41122-01-1	2	ADAPTER - .50 FPT x No. 8 - On Valve Manifold
28	42582-02-9	2	LABEL - Warning - Do Not Operate without Guards in Place
29	43449-01-9	2	CABLE - Auger Sensor

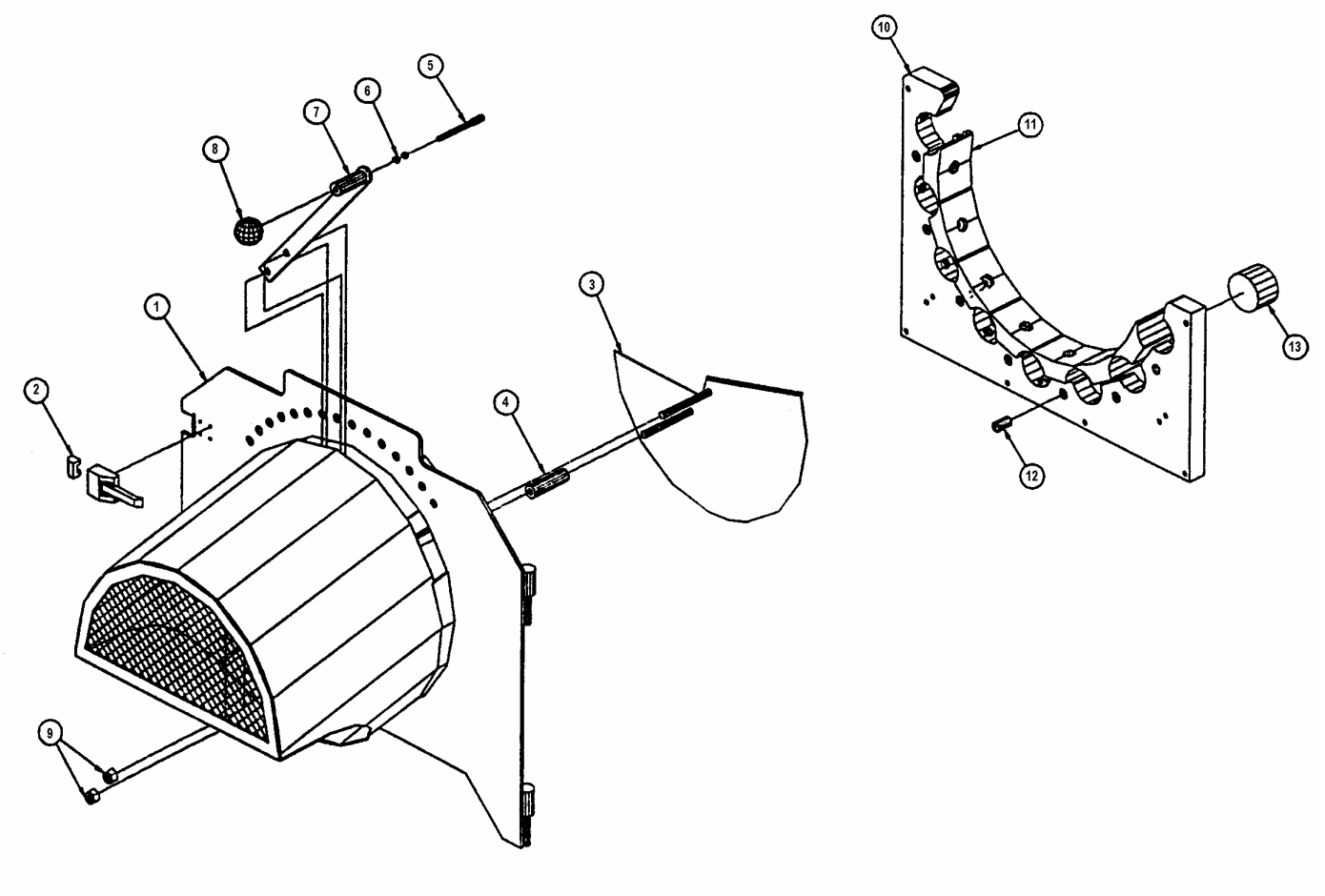
W - Plain Washer, LW - Lock Washer, N - Nut

5.3050 MECHANICAL AUGER DISCHARGE



Ref. No.	Part Number	No. Req.	Description
1	59227-01-5	2	Auger Assy. Mechanical
3	25280-01-5	1	Drum Wldmt, M2800 Mech. LH
	25280-02-5	1	Drum Wldmt. M2800 Mech. RH
4	41354-01-9	2	Latch, O/C Draw
5	24273-01-5	2	Housing, Disch. Auger Shaft
6	43231-02-9	4	Brg, SLV 1.50 Polymer w/flg 1.75 O.D.
7	43265	2	GMTR- REFER TO TAG ON GEARMOTOR FOR VOLTAGE AND RATIO
8	24851-01-5	2	Drip Pan, Mech. Auger Discharge
9	31186-04-5	2	Spacer, 2.94
10	24845-01-5	2	Holder, Auger Sensor, Mech.
11	43449-01-9	2	Sensor Cable - Auger
12	43450-01-9	2	Sensor, Inductive Proximity

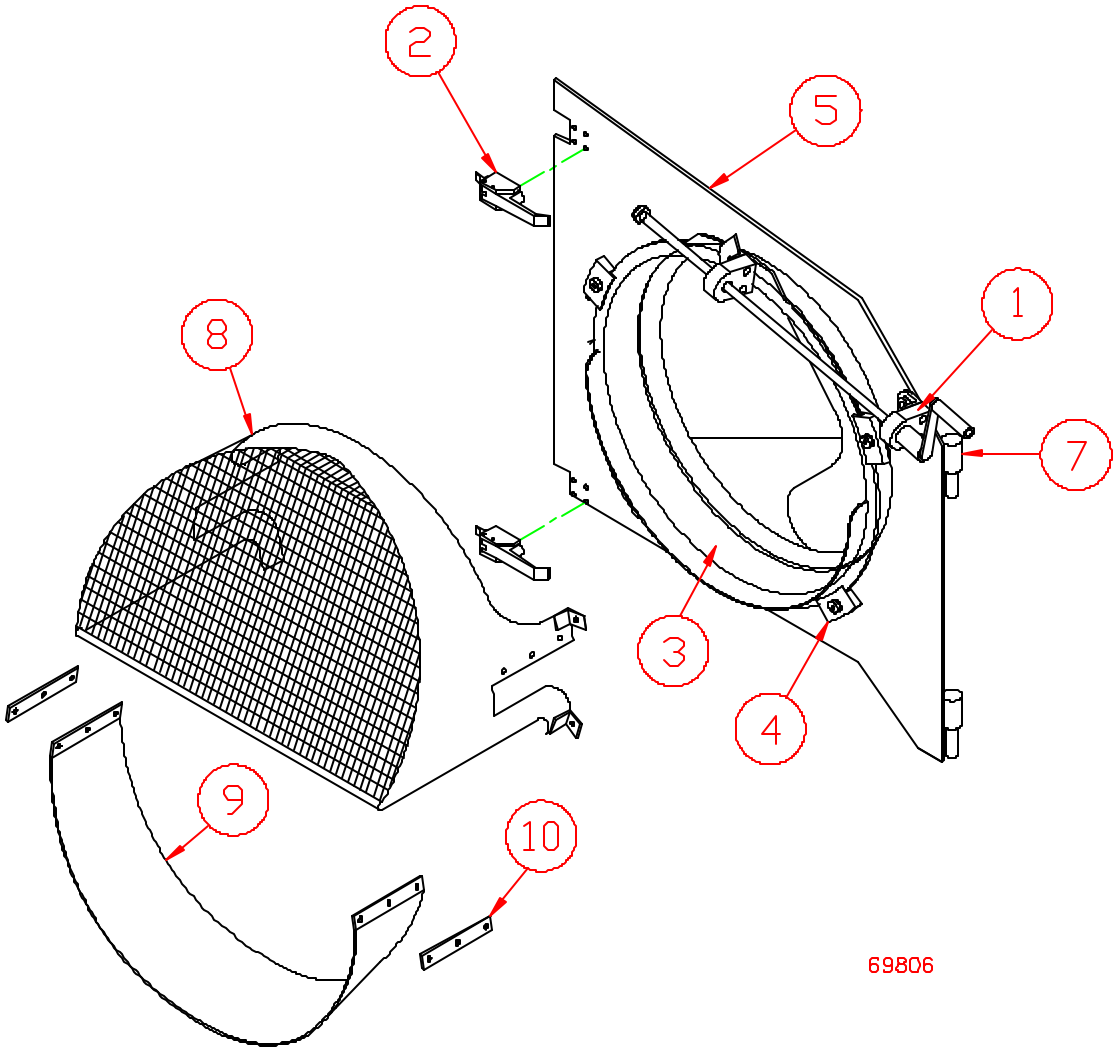
5.3100 GATE DISCHARGE



5.3100 GATE DISCHARGE

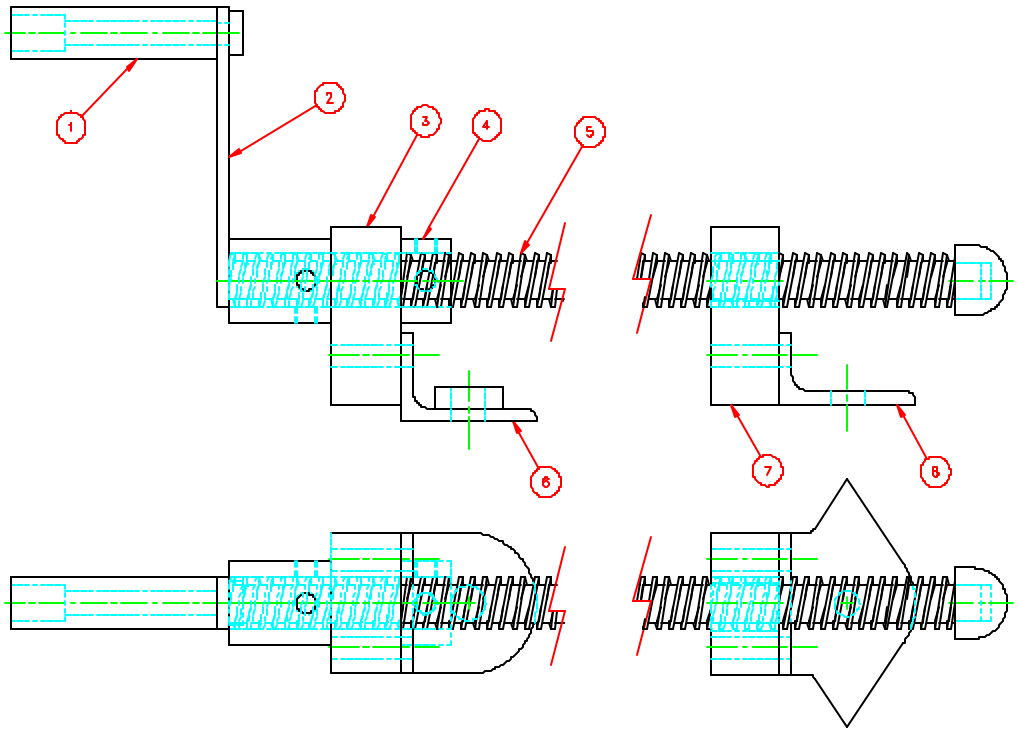
Ref. No.	Part Number	No. Req.	Description
1	24682-01-5	1	SHROUD - 2800 Manual Discharge Gate
1	24682-02-5	1	SHROUD - 2800 Manual Discharge Gate
2	41354-01-9	4	LATCH - O/C Draw
3	21601-01-5	2	GATE WLDMT - Discharge
4	34915-01-5	2	BUSHING - 1.00 Dia
5	31004-01-5	2	LATCH PIN - 4.50
6	40199-01-1	2	SPRING - Compr .062
7	20301-01-5	2	HANDLE ASSEMBLY
8	40198-01-9	2	HANDLE - Ball .38-24
10	41750-01-9	2	BEARING BLOCK - Discharge End
11	41748-01-9	AR	BEARING BLOCK CAP - Upper, Nitrile
11	42998-01-9	AR	BEARING BLOCK CAP - Upper, w/CP
12	32171-01-9	14	PLUG - Bearing Block - Tapped
13	34908-01-9	4	PLUG - Bearing Block - 12 Roll Units

5.3200 NATURAL FLOW GATE DISCHARGE



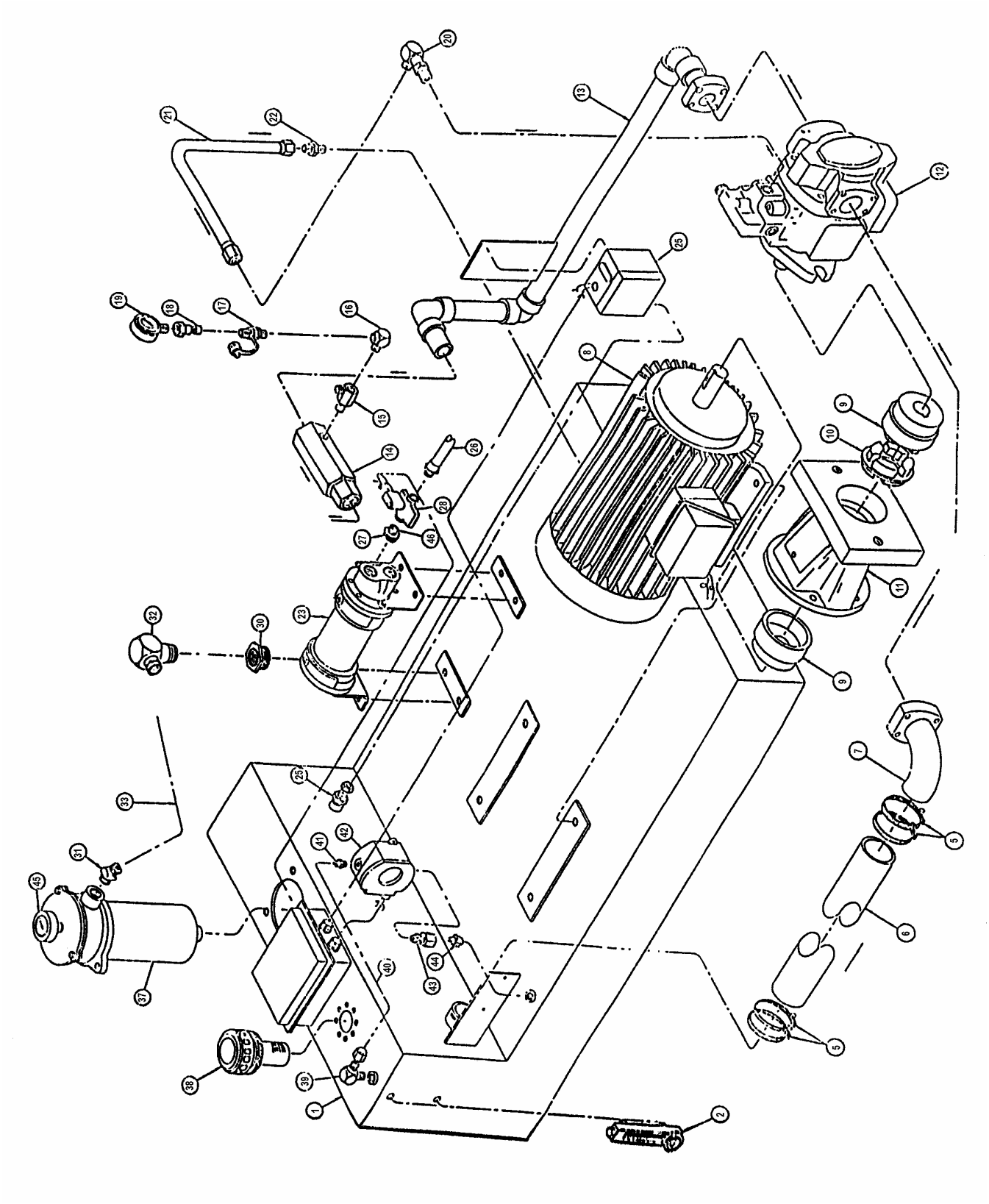
Ref. No.	Part Number	No. Req.	Description
1	59316-01-5	1	Handle Assembly, Natural Flow Gate
2	41354-01-9	4	Latch – O/C Draw
3	25398-01-5	1	Gate, Natural Flow
4	38939-01-9	4	Guide, Natural Flow Gate rotation
5	25400-01-5	1	Door, RH Swing
	25400-02-5	1	Door, LH Swing
7	32582-01-5	2	Pin, Pivot
8	25312-01-5	1	Shroud, Natural Flow Gate
9	38976-01-9	1	Chute Extension, Natural Flow Gate (Volta)
10	25367-01-5	2	Clamp, Chute Extension (Volta)

5.3200 NATURAL FLOW GATE DISCHARGE



Ref. No.	Part Number	No. Req.	Description
1	38936-01-5	1	Handle, Discharge
2	25317-01-5	1	Handle, Weldment Discharge
3	38938-01-9	1	Pivot Block, Plastic
4	38941-01-5	1	Collar, Locking
5	25366-01-5	1	Shaft, Manual NF Gate
6	25358-01-5	1	Brkt, Angle Discharge
7	38937-01-9	1	Nut, Stationary Plastic
8	38934-01-5	1	Brkt, Gate Position Marker
9	38935-01-5	1	End Cap

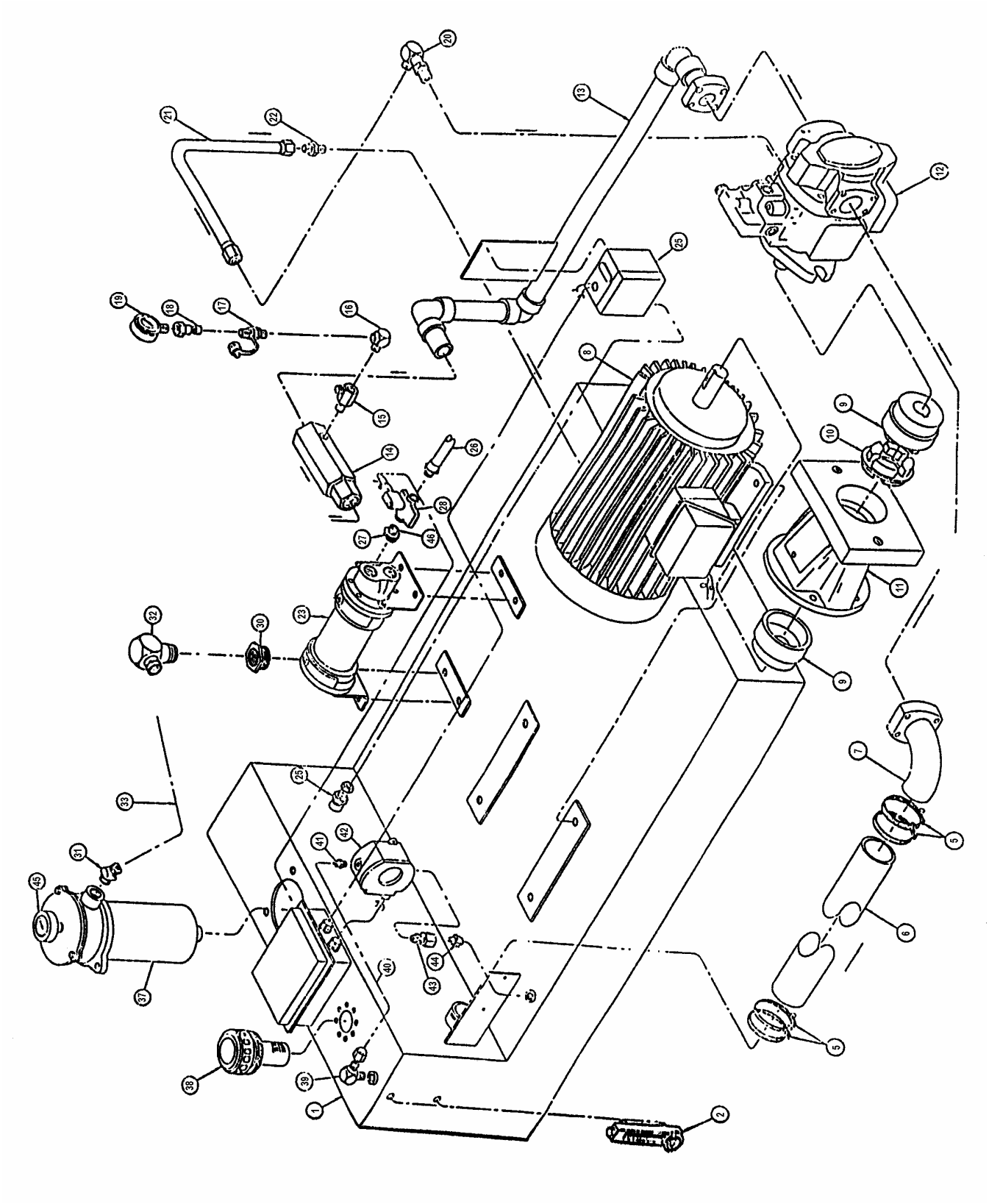
5.4100 HYDRAULIC DRIVE ASSEMBLY



5.4100 HYDRAULIC DRIVE ASSEMBLY

Ref. No.	Part Number	No. Req.	Description
	41955-04-1	1	*HYDRAULIC DRIVE ASSEMBLY - 12 or 16 Motor Drive
	41955-19-1	1	#HYDRAULIC DRIVE ASSEMBLY - 12 or 16 Motor Drive
	41955-29-1	1	#HYDRAULIC DRIVE ASSEMBLY - w/SS H.E.
			Each Includes the Following Parts:
1	42076-02-1	1	RESERVOIR - 65 Gallon
2	42077-01-9	1	SIGHT GAUGE - Fluid Level and Temperature
5	- -	4	HOSE CLAMP - 2.0"
6	- -	1	HOSE - 2.0" X 36.00" Long
7	- -	1	INLET FLANGE ASSEMBLY
	43532-01-9	1	O-RING - Pipe Inlet
8	41726-01-9	1	*ELECTRIC MOTOR - 25 HP - 230/460 3 60C
8	42977-01-9	1	#ELECTRIC MOTOR - 30 HP - 230/460 3 60C 286 TC
9	41613-01-9	1	COUPLING - Cmplt - Elect Mtr to Pump - 1.38 x 1.75 Bores,
			Includes 41613-06-9 Insert
10	41613-06-9	1	INSERT - Coupling
11	41614-02-9	1	PUMP MOUNT
12	42079-02-9	1	PUMP - W/Pressure Compensating Control
13	- -	1	PIPING - 1.5" NPT - Pump Outlet to Check Valve
	43532-02-9	1	O-RING - Pipe Outlet
14	42081-02-9	1	CHECK VALVE
15	42083-01-9	1	SNUBBER
16	- -	1	ELBOW - .25" NPT x .125" NPT
17	42084-01-9	1	PRESSURE TAP - .125" NPT
18	42085-01-9	1	TAP ADAPTER
19	42082-01-9	1	PRESSURE GAUGE - .25" NPT
20	41955-04-1-101	1	ELBOW - 90° - .625" Tube x #10 SAE Male
21	41955-04-1-100	1	TUBING - .625" - Pump Drain Line
22	41955-04-1-102	1	STRAIGHT CONNECTOR - .625" Male Tube x .625" Male Pipe
23	41216-01-9	AR	HEAT EXCHANGER - B1002-C6-T
23	41216-01-5	AR	HEAT EXCHANGER - SS R1002 C6-T-SS
25	42127-02-9	1	TEMPERATURE SWITCH
26	42148-02-9	2	HOSE - Heat Exchanger - Water - .75" NPT
27	41655-15-1	2	BUSHING - 1.50" MPT x .75" FPT
28	42130-02-9	1	SOLENOID - Water - .75" NPT
29	- -	1	JUNCTION BOX
30	41655-16-1	1	BUSHING - 1.50 MPT x 1.25 FPT
31	41068-04-9	1	ELBOW - 45° - 1.25" Male O-Ring Thread x 1.25" Male Tube
32	41068-05-9	1	ELBOW - 90° - 1.25" MPT x 1.25" Male Tube
33	43408-01-9	1	TUBING - 1.25" x 10.00" Flared Tube w/ends
37	42086-01-9	1	FILTER - Includes 42089-01-9 Filter Element
	42089-01-9	1	FILTER ELEMENT - MP#F18-P10A
38	41623-01-9	1	FILLER BREATHER
39	- -	1	ELBOW - 90° - .375" Male Tube x .375" Male NPT
40	- -	1	TUBING - .375" - Upper Float Switch
41	- -	1	CONNECTOR - .375" Male Tube x .25" Female NPT
42	42078-01-9	1	FLOAT SWITCH - Low Fluid Level

5.4100 HYDRAULIC DRIVE ASSEMBLY

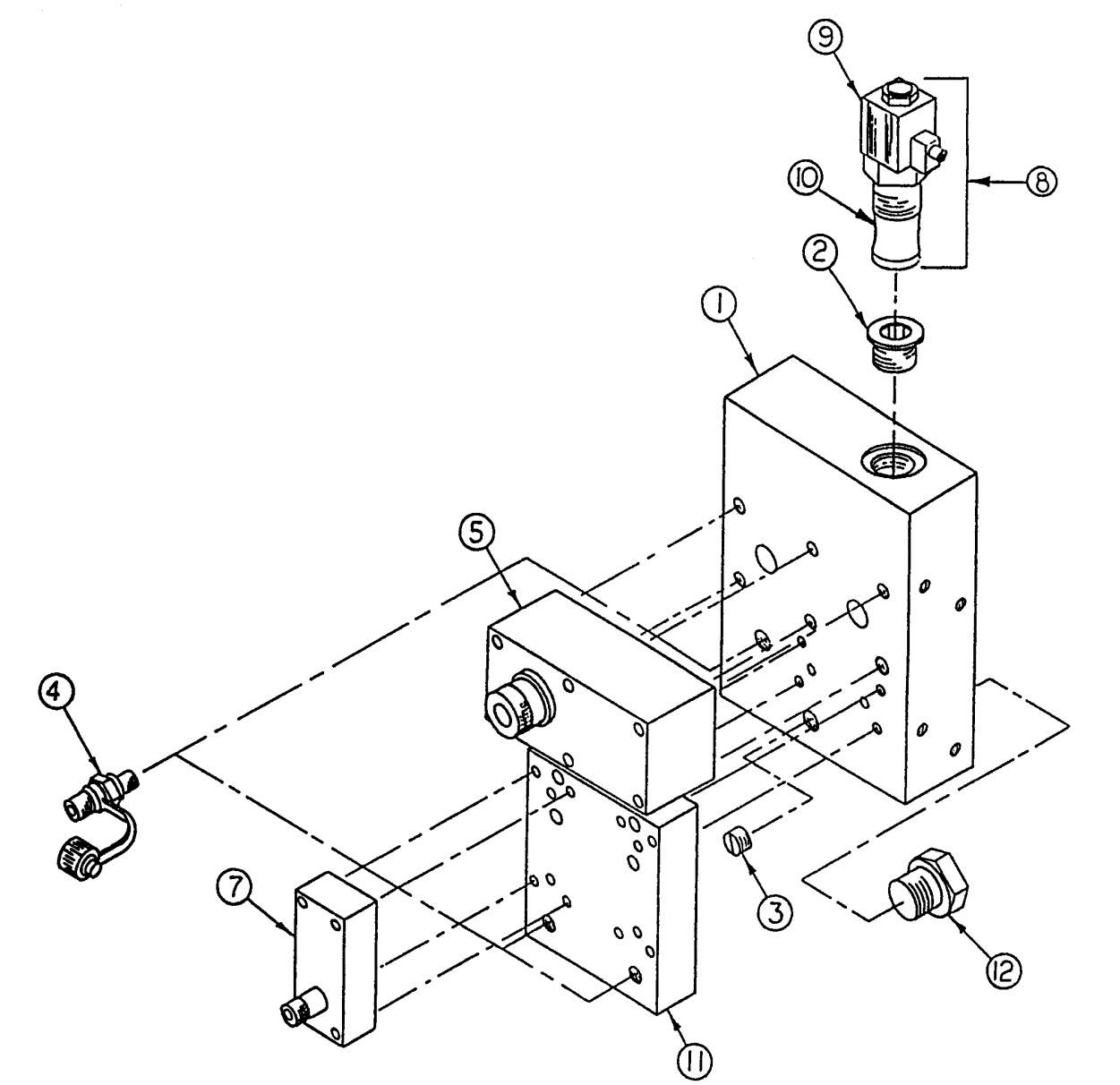


5.4100 HYDRAULIC DRIVE ASSEMBLY

Ref. No.	Part Number	No. Req.	Description
43	- -	1	CONNECTOR - Female Swivel - .50 NPT x .50 Tube
44	- -	1	CONNECTOR - .38 NPT x .50 Tube
45	42576-01-9	1	GAUGE - Filter Element Restriction
46	41929-01-1	1	NIPPLE - Close - .75 NPT

*To Serial No. M28** - 033192
#Serial No. M28** - 040192 and after

5.4210 FLOW CONTROL MANIFOLD ASSEMBLY



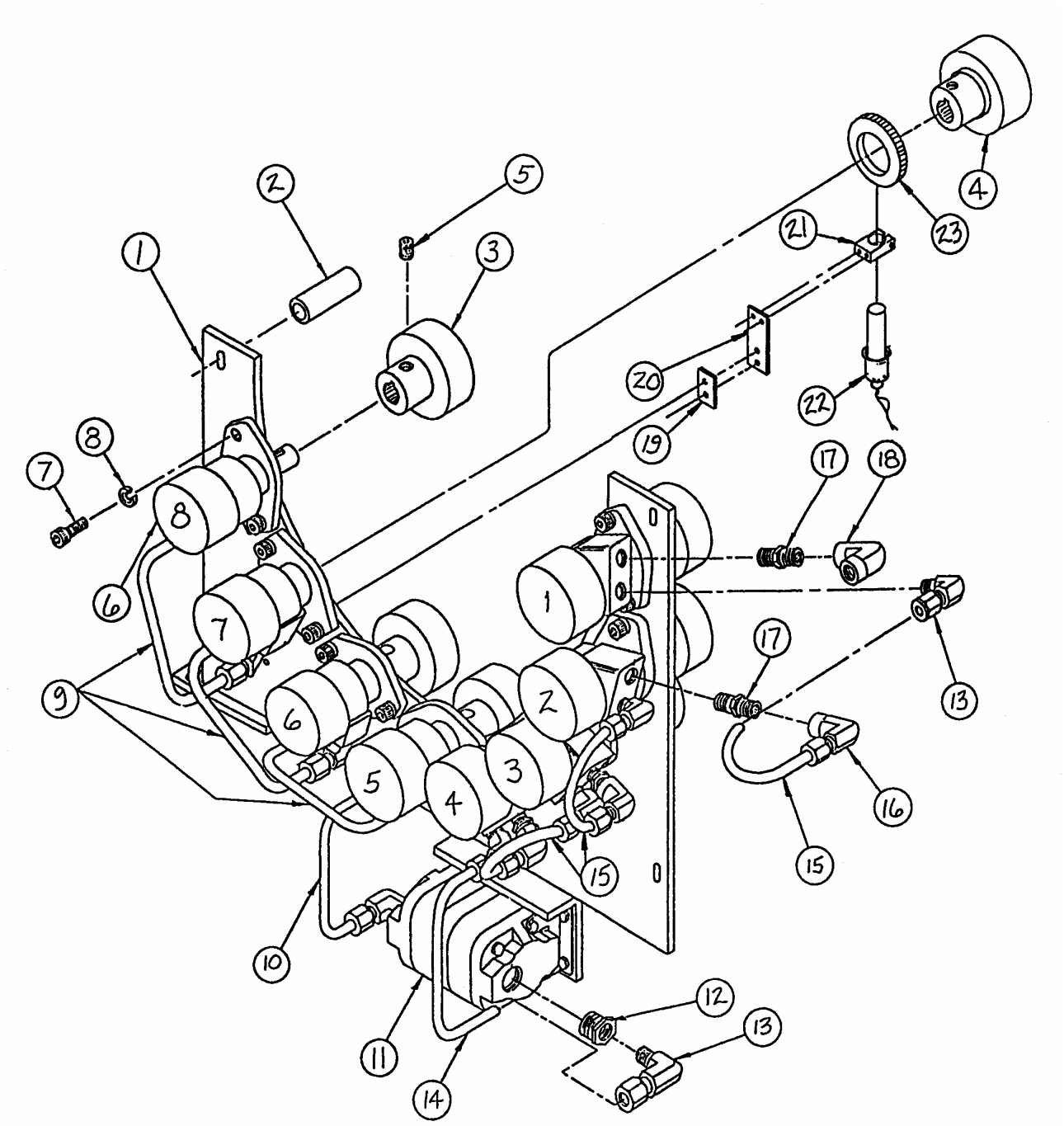
5.4210 FLOW CONTROL MANIFOLD ASSEMBLY

Ref. No.	Part Number	No. Req.	Description
	41956-01-9	2	MANIFOLD ASSEMBLY- Flow Control -Includes Parts Identified By (*)
	48018-01-5	8	Cap Screw, .31-18 x .75 and LW
1	42087-01-9	2	*MANIFOLD
2	42425-02-9	2	*PLUG - Hex. Soc. - No. 16 O-Ring - Solenoid Valve Port
3	42425-03-9	2	PLUG - Hex. Soc. - No. 4 O-Ring - With Tumbling Unit
4	42084-02-9	AR	*TAP ADAPTER - Pressure Testing - No. 4 O-Ring
5	41958-02-9	2	*VALVE - Flow Control - Peeling Rollers
7	41958-01-9	AR	VALVE - Flow Control - Auger Discharge and Tumbling Unit
8	41751-01-9	2	VALVE - Solenoid - Optional Intermittent Operation - Includes Ref. No.'s 9 & 10
9	41751-01-9-100	2	COIL - Solenoid Valve
10	41751-01-9-200	2	CARTRIDGE - Solenoid Valve
11	42154-01-9	2	MANIFOLD - With Tumbling Unit
12	42425-01-9	2	*PLUG - Hyd. Hex. Soc. - No. 8 O-Ring - With Tumbling Unit

NOTE: Machine will be equipped as follows:
Reference No. two (2) for continuous operation or eight (8) for intermittent operation.

LW - Lock Washer

5.4300 HYDRAULIC MOTOR MOUNTING PLATE ASSEMBLY



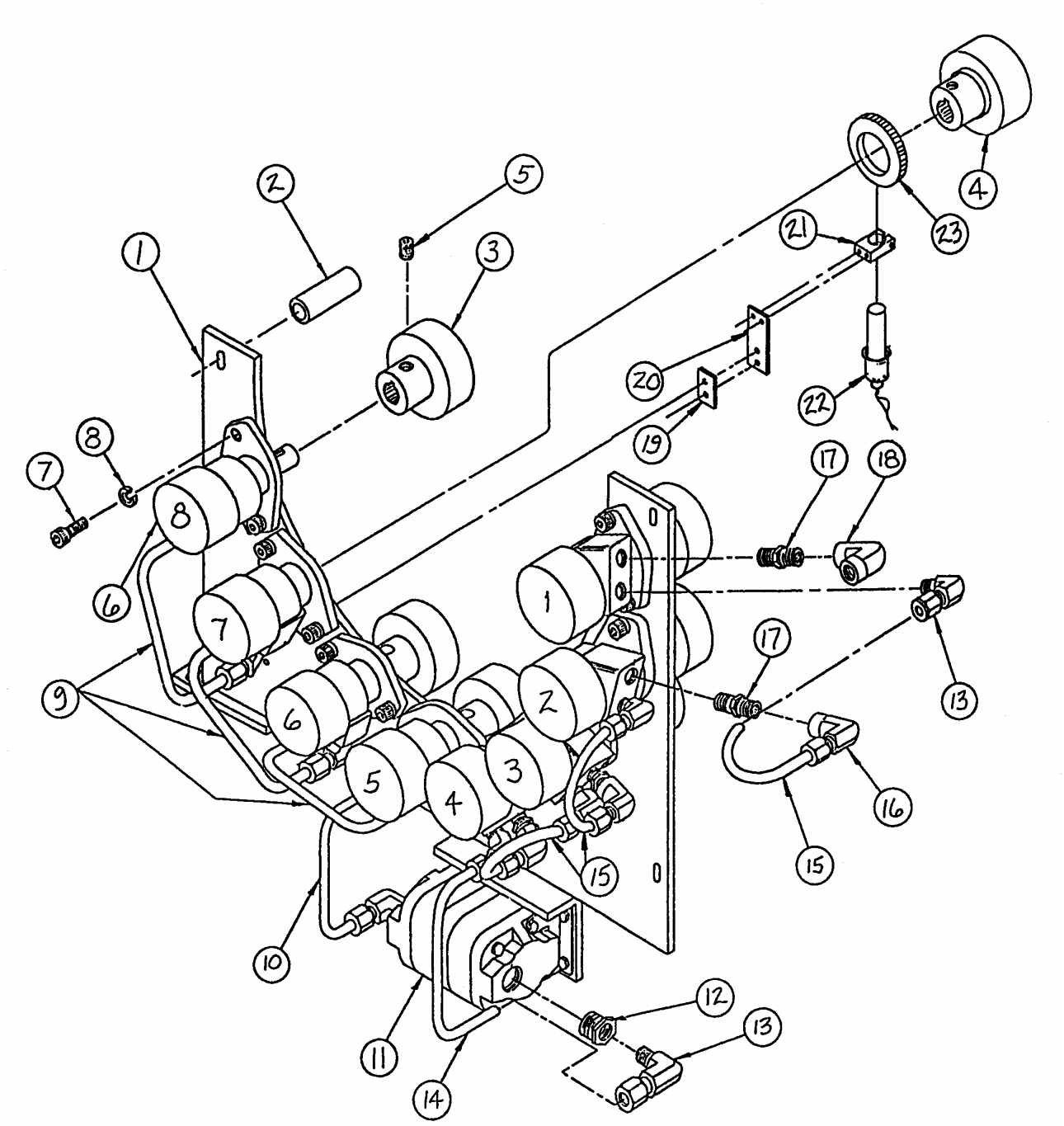
5.4300 HYDRAULIC MOTOR MOUNTING PLATE ASSEMBLY

Ref. No.	Part Number	No. Req.	Description
1	20582-03-1	1	MOUNT - Hydraulic 6 or 8 Motor - RH (Illustrated)
	20582-02-1	1	MOUNT - Hydraulic 6 or 8 Motor - LH
2	32364-01-1	4	SPACER - Firewall - 3.25 Long
	48058-01-5	4	Cap Screw, .38-16 x 5.0, W, LW and N
	48051-01-5	2	Cap Screw, .38-16 x 1.5, W, LW and N
	48063-01-5	8	Nut, .38-16 Nylon Lock
	42995-01-5	10	Washer, .41 ID x 1.00 OD x .12
3	40236-01-9	14	COUPLER - Motor to Roller - 1.00 Bore
4	37008-01-9	2	COUPLER - Motor to Roller - 1.00 Bore - For Tach Pickup Gear
5	48171-01-1	16	Set Screw, Soc. Hd., .38-16 x .50
6	40973-01-9	16	MOTOR - Hydraulic - Roller Drive - 4.2 cu in To Serial No. M28**-093088
	40973-01-9-100	Req.	SEAL KIT - Hydraulic Motor
6	40973-03-9	16	MOTOR - Hydraulic - Roller Drive - 3.6 cu in Serial No. M28**-100188 and after
	40973-03-9-100	Req.	SEAL KIT - Hydraulic Motor
7	48270-01-1	32	Cap Screw, Soc. Hd., .50-13 x 1.25
8	48104-01-1	32	Lock Washer, .50
9	29473-09-1	5	TUBE - Pressure Inlet - Rollers No. 6, 7 and Left Side No. 8 - .625 OD Includes 1 each 41047-02-1 and 41888-01-1 Elbows
9	29473-10-1	1	TUBE - Pressure Inlet, Roller Right Side No. 8 - .625 OD - Includes 1 each 41047-02-1 and 41888-01-1 Elbows
10	29473-06-1	2	TUBE - Pressure Inlet - Flow Divider to No. 5 Rollers - .625 OD - Includes 2-41047-02-1 Elbows To Serial No. M28**-022891
10	29473-11-1	2	TUBE - Pressure Inlet - Flow Divider to No. 5 Rollers - .625 OD - Includes 2-41047-02-1 Elbows Serial No. M28**-030191 and after
11	41214-02-9	2	FLOW DIVIDER - Mdl P27 To Serial No. M28**-123190
11	41214-01-9	2	FLOW DIVIDER - Mdl P23 Serial No. M28**-010191 and after
	48049-01-5	4	Cap Screw, .38-16 x 1.0, LH and N
13	41047-02-1	20	ELBOW - .625 Tube x .50 NPT Male - 90°
14	29473-17-1	2	TUBE - Pressure Inlet - Flow Divider to No. 4 Roller - .625 OD - Includes 2-41047-02-1 Elbows
15	29473-08-1	6	TUBE - Pressure Inlet - Rollers No. 1, 2 and 3 - .625 OD - Includes 1 each 41047-02-1 and 41888-01-1 Elbows
16	41888-01-1	12	ELBOW - .625 Tube x .50 NPT Female - 90°
17	41034-01-1	16	NIPPLE - Hyd - .50 NPT
18	41068-01-1	4	ELBOW - Hyd - .50 NPT - 90°

NOTE: "Number Required" for reference number two (2) through eighteen (18) is the total quantity for both part numbers 20582-03-1 and 20582-02-1.

W - Washer, LW - Lock Washer, N - Nut

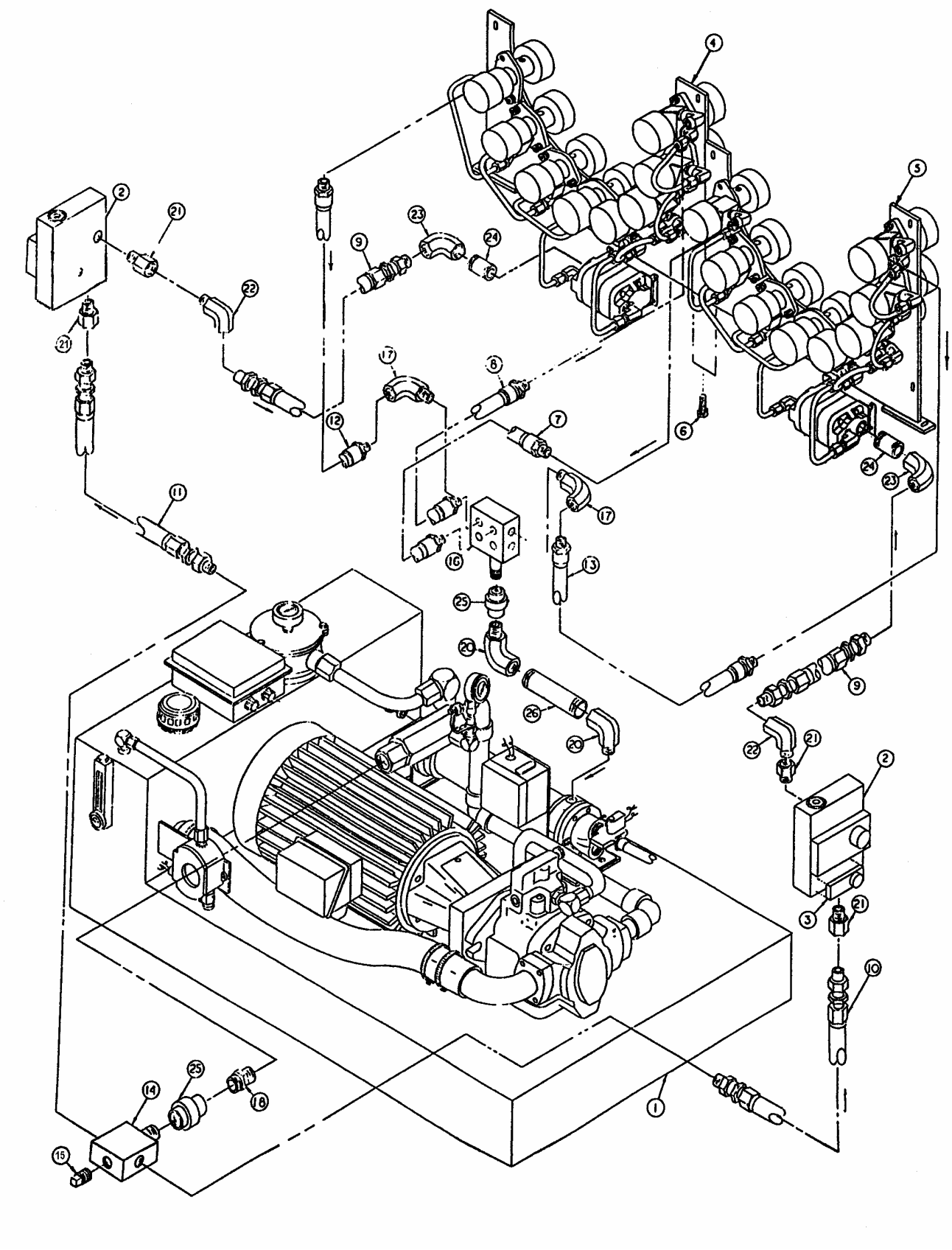
5.4300 HYDRAULIC MOTOR MOUNTING PLATE ASSEMBLY



5.4300 HYDRAULIC MOTOR MOUNTING PLATE ASSEMBLY

Ref. No.	Part Number	No. Req.	Description
19	37089-01-5	2	SPACER - Rectangular
20	37034-01-5	2	BRACKET - Magnetic Pickup Mount
	48003-01-5	4	Cap Screw, .25-20 x 1.25
21	41543-01-9	2	HOLDER - Magnetic Pickup
22	41542-01-9	2	PICKUP - Magnetic - LMPC - Roller Speed
23	37027-01-1	2	GEAR - Pickup - 20P-60T

5.4400 HYDRAULIC MOTOR DRIVE



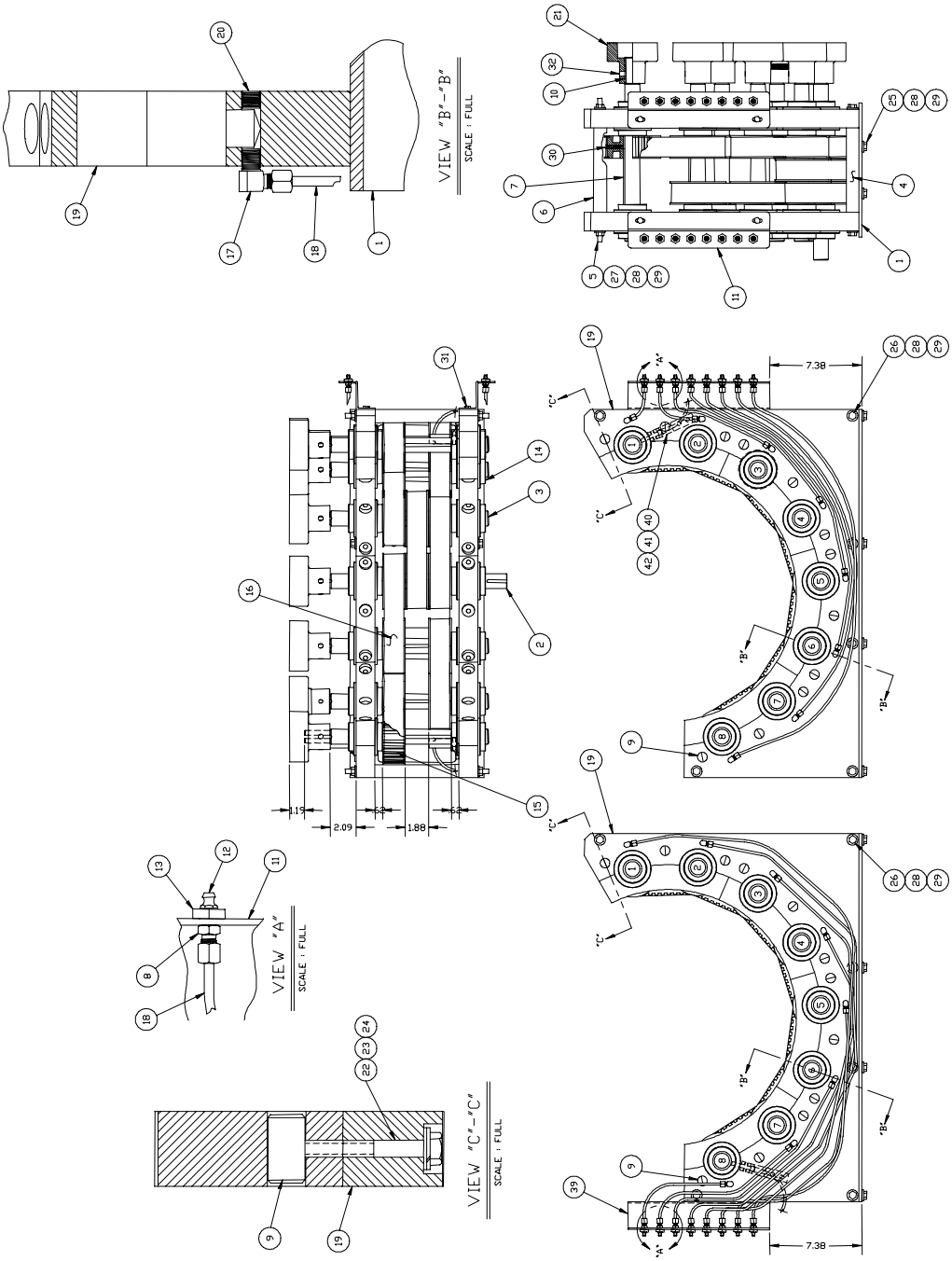
5.4400 HYDRAULIC MOTOR DRIVE

Ref. No.	Part Number	No. Req.	Description
1	41955-04-1	1	HYDRAULIC - Drive Assembly - See Breakdown Section 5.4100 - With 25 HP Motor To Serial No. M28** - 033192
1	41955-19-1	1	HYDRAULIC - Drive Assembly - See Breakdown Section 5.4100 - With 30 HP Motor Serial No. M28** - 040192 and after
2	41956-01-9	2	MANIFOLD ASSEMBLY - Flow Control - See Breakdown Section 5.4200
4	29356-01-9	1	EIGHT (8) MOTOR MOUNTING PLATE ASSEMBLY - LH - See Breakdown Section 5.4300
5	29356-02-9	1	EIGHT (8) MOTOR MOUNTING PLATE ASSEMBLY - RH - See Breakdown Section 5.4300
4	29356-05-9	1	SIX (6) MOTOR MOUNTING PLATE ASSEMBLY - LH - See Breakdown Section 5.4300
5	29356-06-9	1	SIX (6) MOTOR MOUNTING PLATE ASSEMBLY - RH - See Breakdown Section 5.4300
6	21156-01-5	2	BOLT - Level Adjusting - .50-13 x 2.0
	48102-01-1	2	Nut, .50-13
7	29345-03-9	1	HOSE - Hyd - .50 x 30.88 - Right Side #8 Motor To Return Manifold
8	29345-19-9	1	HOSE - Hyd - .50 x 37.88 - Left Side #1 Motor To Return Manifold
9	29345-22-9	2	HOSE - Hyd - .75 x 46.50 - Flow Control Manifold To Flow Divider
10	29345-23-9	1	HOSE - Hyd - .75 x 32.50 - Right Side Flow Control To Pressure Manifold
11	29345-25-9	1	HOSE - Hyd - .75 x 39.0 - Left Side Flow Control To Pressure Manifold To Serial No. M28** -033192
11	29345-28-9	1	HOSE - Hyd - .75 x 41.50 - Left Side Flow Control to Pressure Manifold Serial No. M28** - 040192 and after
12	29345-52-9	1	HOSE - Hyd - .50 x 47.88 - Left Side #8 Motor To Return Manifold
13	29345-53-9	1	HOSE - Hyd - .50 x 53.88 - Right Side #1 Motor To Return Manifold
14	34162-01-9	1	MANIFOLD - Pressure
15	40578-01-1	1	PLUG - Pipe - Sq Hd - .50 NPT
16	36438-01-9	1	MANIFOLD - Return - Rolls, Discharge Auger and Tumbling Unit Motors
17	41048-01-1	2	ELBOW - Hyd - Street - .50 NPT - 90°
18	41115-03-1	1	NIPPLE - Hyd - Close - 1.50 NPT
20	40490-04-1	2	ELBOW - Hyd - Street - 1.50 NPT
21	41317-02-1	4	ADAPTER - Hyd No. 12 x .75 FPT
22	40382-01-1	2	ELBOW - Hyd - Street - .75 NPT - 90°
23	41068-02-1	2	ELBOW - Hyd - .75 NPT - 90°
24	40385-01-1	2	NIPPLE - Pipe - .75 NPT x 3
25	41658-02-1	2	UNION - Pipe - 1.50 NPT
26	42108-06-1	1	NIPPLE - Pipe - 1.50 NPT x 6

5.4500 DRIVE CASE MECHANICAL (RYERTEX)

Ref. No.	Part Number	No. Req.	Description
1	31426-01-5	1	DRIVE CASE BASE
2	35949-02-1	1	DRIVE SHAFT – 17.38
3	35948-01-1	7	DRIVE CASE SHAFT - 14.75
4	31489-01-1	4	CONNECTOR - 6.75
5	31684-01-1	2	CONNECTOR ROD - 11.50
6	31685-01-5	2	ROUND CONNECTOR - 6.75
7	34185-29-1	8	KEY - 5.25
8	31979-02-9	16	FITTING
9	32171-01-9	24	BEARING BLOCK PLUG
10	34185-22-1	8	KEY - 2.00
11	34252-02-5	2	BANK - Grease RH
12	40098-01-1	16	ZERK - Straight
13	40101-01-9	16	NUT - Brass Thin
14	40316-01-9	16	ROLLER BEARING
15	40319-01-9	16	PULLEY - Timing
16	40320-01-9	8	BELT - Timing
17	41466-01-9	16	ELBOW - Brass
18	41553-01-9	25	TUBING - Nylon Black
19	40701-01-9	2	BEARING BLOCK
20	41067-01-1	16	FLUSH PLUG
22	48027-01-5	24	SCREW - .31
24	48040-01-5	24	FLAT WASHER - .31
25	48050-01-5	8	SCREW - .38
26	48054-01-5	8	SCREW - .38
27	48061-01-5	4	NUT - .38
28	48064-01-5	20	LOCK WASHER - .38
29	48065-01-5	20	FLAT WASHER - .38
30	48168-01-1	32	SCREW - .31
31	48000-01-5	4	SCREW - .25
32	48171-01-5	8	SCREW - .38
39	34252-01-5	2	BANK - Grease LH
40	24821-01-5	2	HOLDER - Roller Sensor
41	43450-01-9	2	SENSOR - Inductive Proximity
42	43448-01-9	2	CABLE - Sensor, Rolls
43	41366-09-9	2	PULLEY - Driven (Not Shown)
44	41366-10-9	2	PULLEY - Drive (Not Shown)
45	41367-08-9	2	BELT - Drive (Not Shown)
46	42294-04-1	2	BUSHING - Driven (Not Shown)
47	41421-03-1	2	BUSHING - Drive (Not Shown)
48	43091-07-9	2	MOTOR - 10HP Drive (Not Shown)

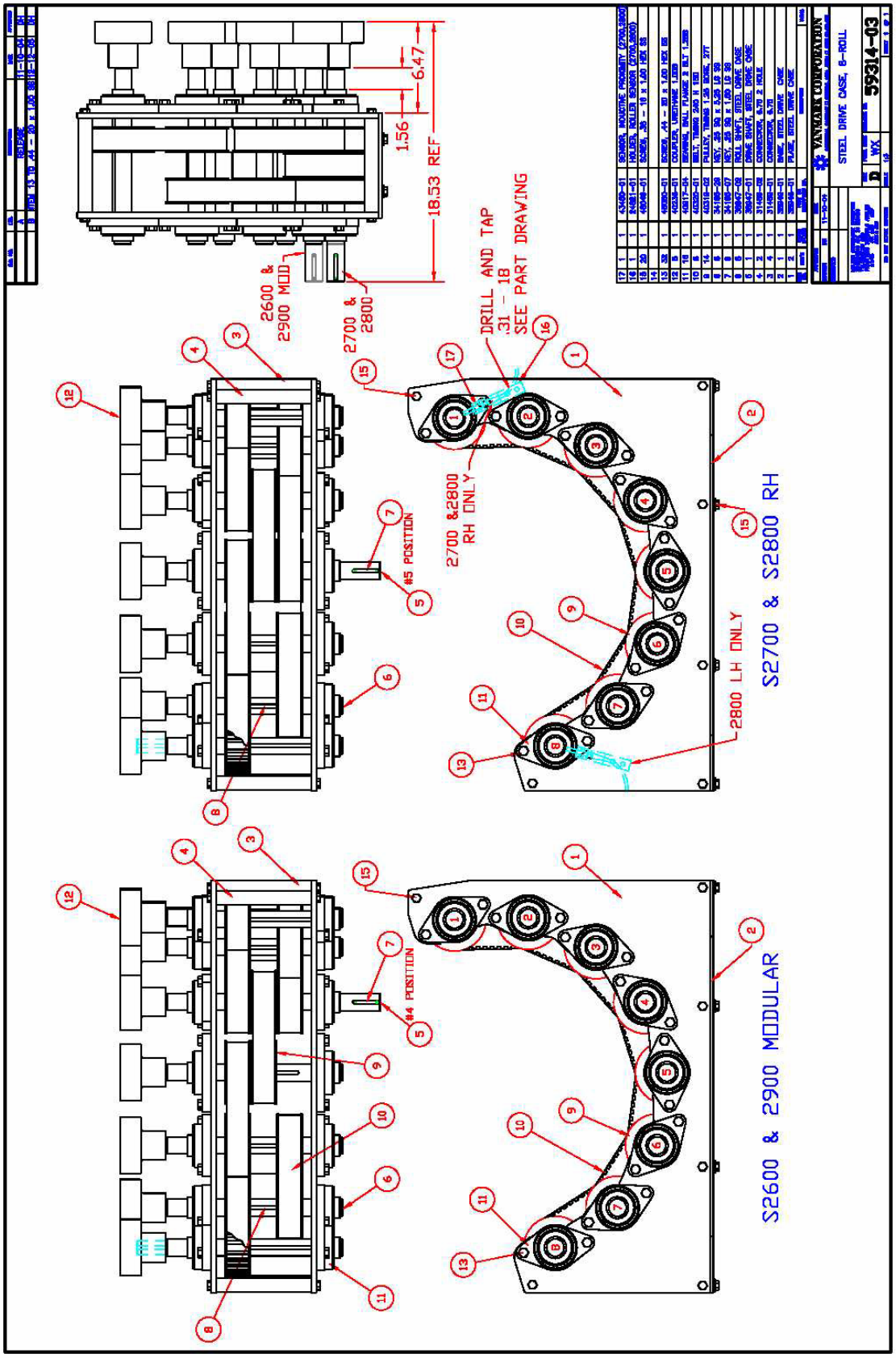
5.4500 DRIVE CASE MECHANICAL (RYERTEX)



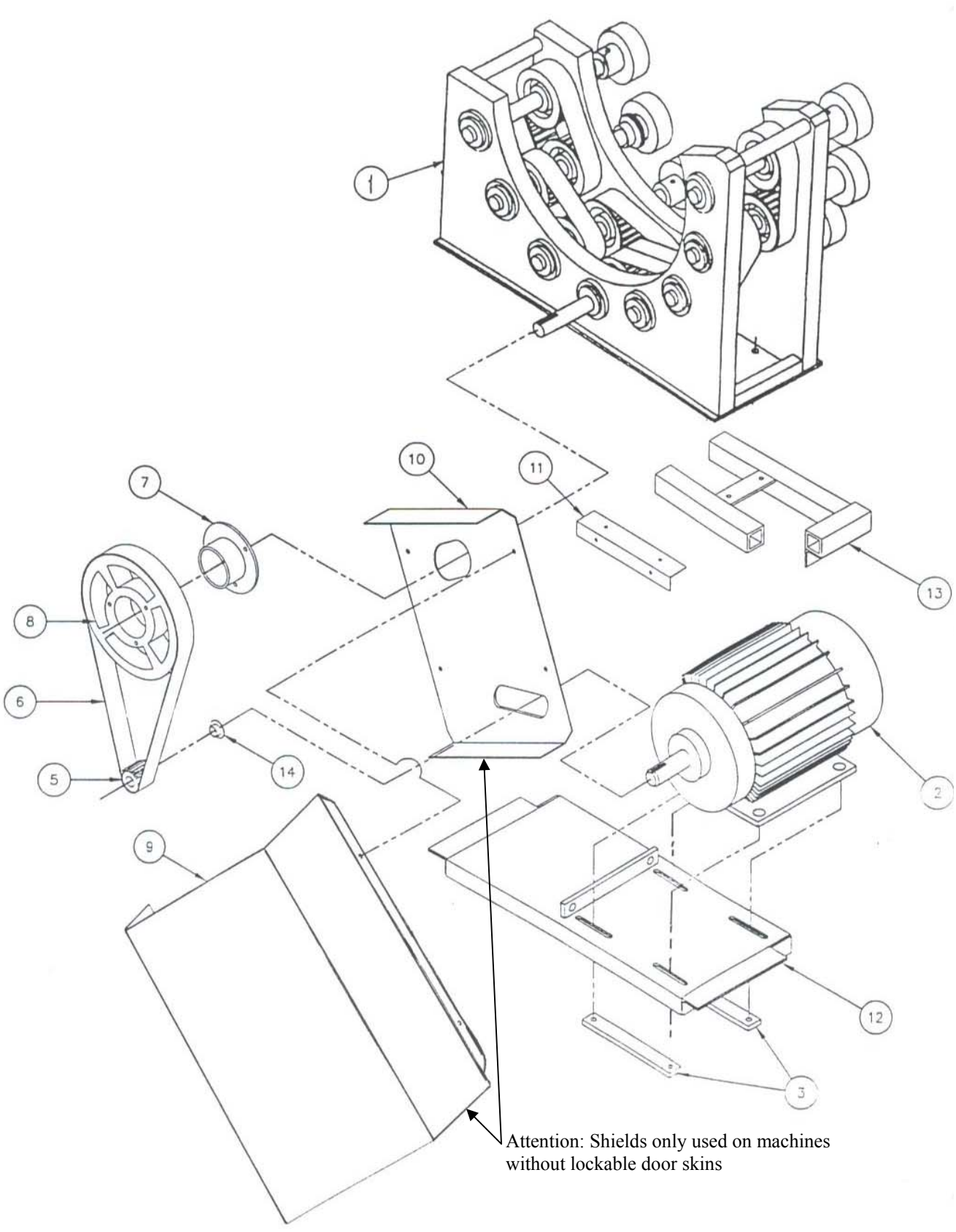
5.4500 DRIVE CASE MECHANICAL (STAINLESS)

Ref. No.	Part Number	No. Req.	Description
1	38946-01-5	2	DRIVE CASE PLATE
2	38949-01-5	1	DRIVE CASE BASE
3	38949-01-5	4	CONNECTOR, 6.75
4	38489-02-5	2	CONNECTOR, 6.75 2 HOLE
5	38947-01-5	1	DRIVE SHAFT, STEEL DRIVE CASE
6	38947-02-5	8	ROLL SHAFT, STEEL DRIVE CASE
7	34185-07-5	9	KEY, .25 SQ x 1.50 LG SS
8	34185-29-5	8	KEY, .25 SQ x5.25 LG SS
9	40319-02-5	14	PULLEY, TIMING 1.25 BORE, 27T
10	40320-01-9	8	BELT, TIMING 240 H 150
11	40917-04-9	16	BEARING, BALL FLANGE 2 BLT 1.25 BORE
12	40236-01-9	8	COUPLER, URETHANE 1.00 BORE
13	48080-01-5	32	SCREW, .44 – 20 x 1.00 HEX SS
14			
15	48090-01-5	20	SCREW, .38 – 16 x 1.00 HEX SS
16	24821-01-5	1	HOLDER, ROLLER SENSOR (2700,2800)
17	43450-01-5	1	SENSOR, INDUCTIVE PROXIMITY (2700,2800)
18	43448-01-9	2	CABLE - Sensor, Rolls
19	41366-09-9	2	PULLEY - Driven (Not Shown)
20	41366-10-9	2	PULLEY - Drive (Not Shown)
21	41367-08-9	2	BELT - Drive (Not Shown)
22	42294-04-1	2	BUSHING - Driven (Not Shown)
23	41421-03-1	2	BUSHING - Drive (Not Shown)
24	43091-07-9	2	MOTOR - 10HP Drive (Not Shown)

5.4500 DRIVE CASE MECHANICAL (STAINLESS)



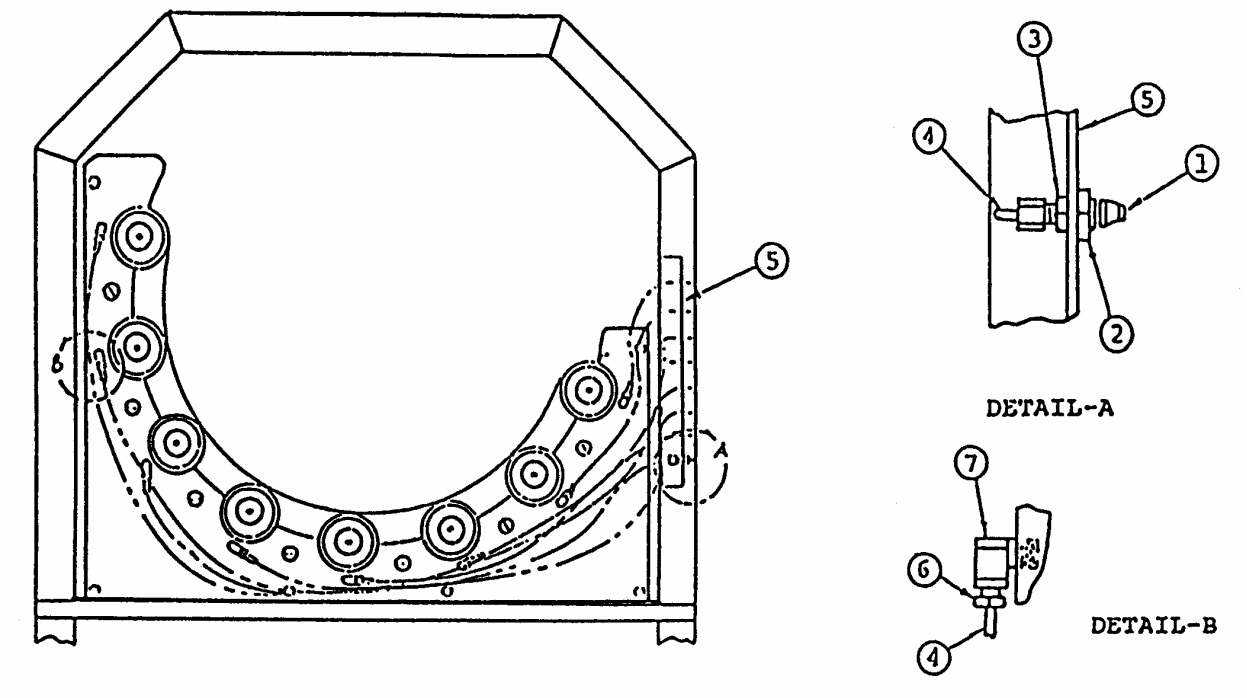
5.4600 MECHANICAL INVERTER DUTY DRIVE



5.4600 MECHANICAL INVERTER DUTY DRIVE

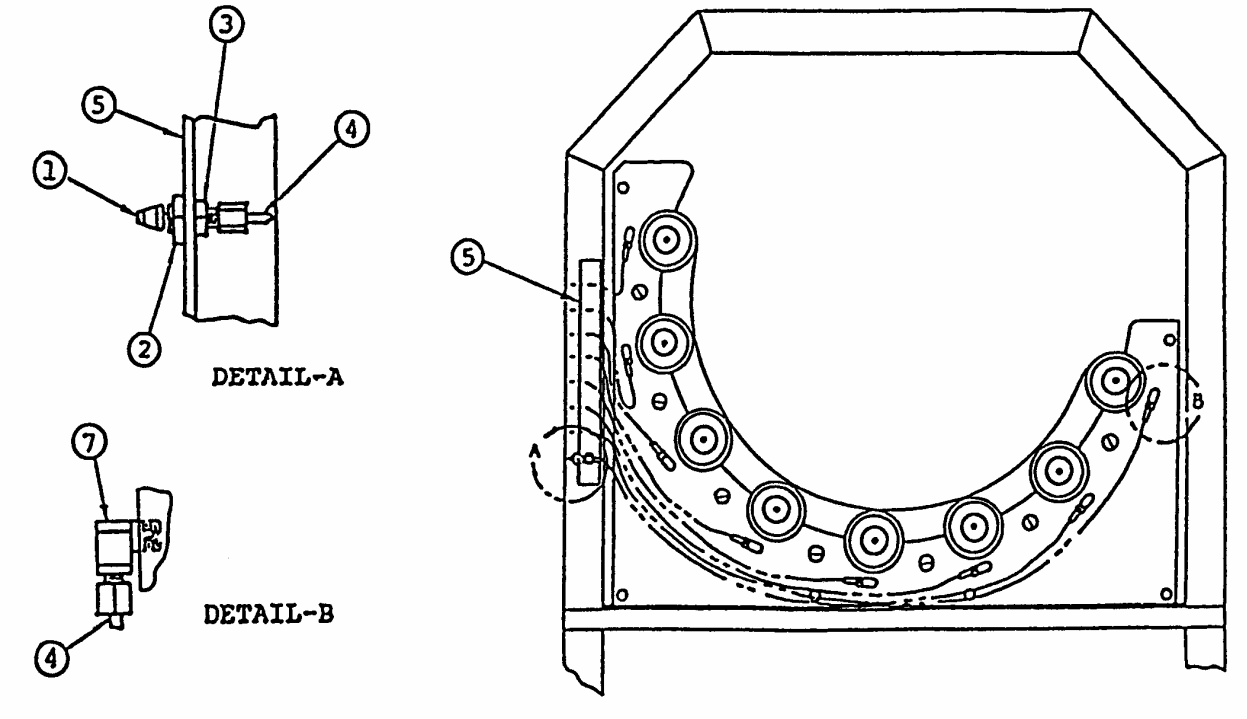
Ref. No.	Part Number	No. Req.	Description
1	29586-01-5	2	DRIVE CASE –See Breakdown Section 5.4500
	48050-01-5	8	Cap Screw, 38-16 x 1.25, W, LW and N
2	43091-12-9	2	MOTOR, 10.00 HP Inverter Duty(Contact Vanmark for Other Voltages)
	48095-01-5	8	Cap Screw, .50-13 x 2 and LW
3	34249-02-5	4	STIFFENER-Motor Mount – Tapped .50-13
4			Ref. No. Not Used
5	41366-10-9	2	PULLEY – Drive 1.12 Bore X 3.15 OD- On Eurodrive
6	41367-08-9	2	BELT – Drive – 69.29 OC
7	42294-04-1	2	BUSHING – QD – Pulley Hub – 1.19 Bore
8	41366-09-9	2	PULLEY – Driven – 11.175 OD – On Drive Case Shaft
9	34283-01-5	2	COVER – Belt Guard
10	34282-01-5	2	BACKPLATE – Belt Guard
11	34284-01-5	2	STANDOFF – Belt guard
12	24885-01-5	1	WELDMENT – Motor Mount
13	31426-01-5	1	MOUNT – Drive Case
	48055-01-5	4	Cap Screw, 38-16 x 3.0, LW and N
14	41421-03-1	2	BUSHING – QD 1.62B

5.5100 MANUAL GREASE BANK 6 SHAFT



29797C-E

5.5110 MANUAL GREASE BANK 8 SHAFT



29796C-E

5.5100 MANUAL GREASE BANK 6 SHAFT

Ref. No.	Part Number	No. Req.	Description
1	31978-01-5	1	GREASE BANK - Zerk Mounting
2	31979-02-9	6	CONNECTOR - Compression - .125 MPT x .19 Tube - Includes Nut and 41281-02-9 Sleeve
	41281-02-9	6	SLEEVE - Compression - .19 OD Tube
3	40098-01-1	6	ZERK - Straight - .25-28
4	40101-01-9	6	NUT - Fitting Retaining - .125 NPT
5	41466-01-9	6	ELBOW - Compression - .125 MPT x .19 OD Tube Includes Nut and 41281-02-9 Sleeve
6	41553-01-9	Req.	TUBE - Nylon - .19 OD - Per Foot
	41067-01-1	2	PLUG - Pipe - Sltd Hd, .12 NPT (6 Roll)
	48216-01-9	5	TY-RAP

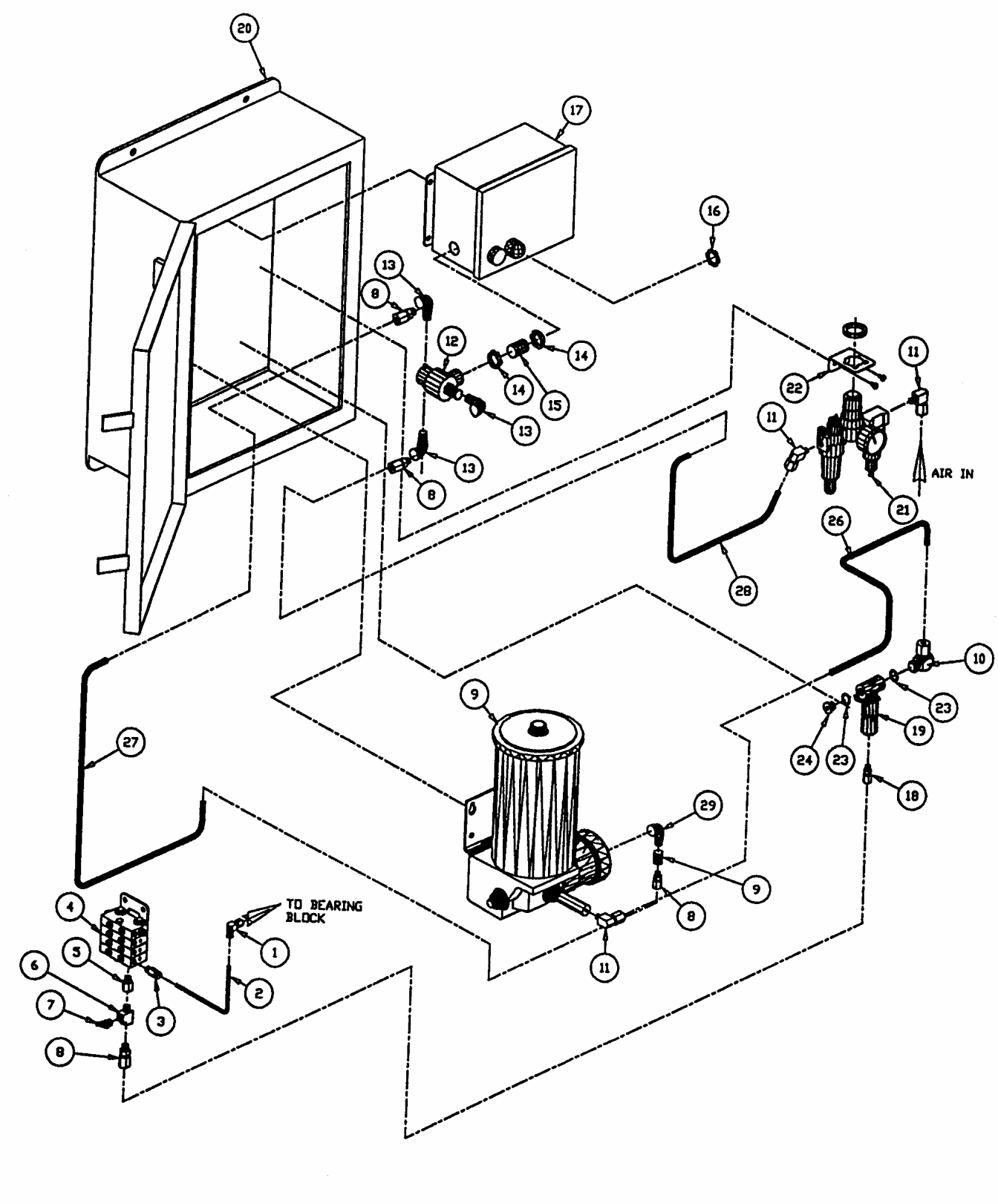
29797C-E

5.5110 MANUAL GREASE BANK 8 SHAFT

Ref. No.	Part Number	No. Req.	Description
1	31978-01-5	1	GREASE BANK - Zerk Mounting
2	31979-02-9	8	CONNECTOR - Compression - .125 MPT x .19 Tube - Includes Nut and 41281-02-9 Sleeve
	41281-02-9	8	SLEEVE - Compression - .19 OD Tube
3	40098-01-1	8	ZERK - Straight - .25-28
4	40101-01-9	8	NUT - Fitting Retaining - .125 NPT
5	41466-01-9	8	ELBOW - Compression - .125 MPT x .19 OD Tube - Includes Nut and 41281-02-9 SLEEVE
6	41553-01-9	Req.	TUBING - Nylon - .19 OD - Per Foot
	48216-01-9	5	TY-RAP

29796C-E

5.5200 AUTOMATIC LUBE SYSTEM



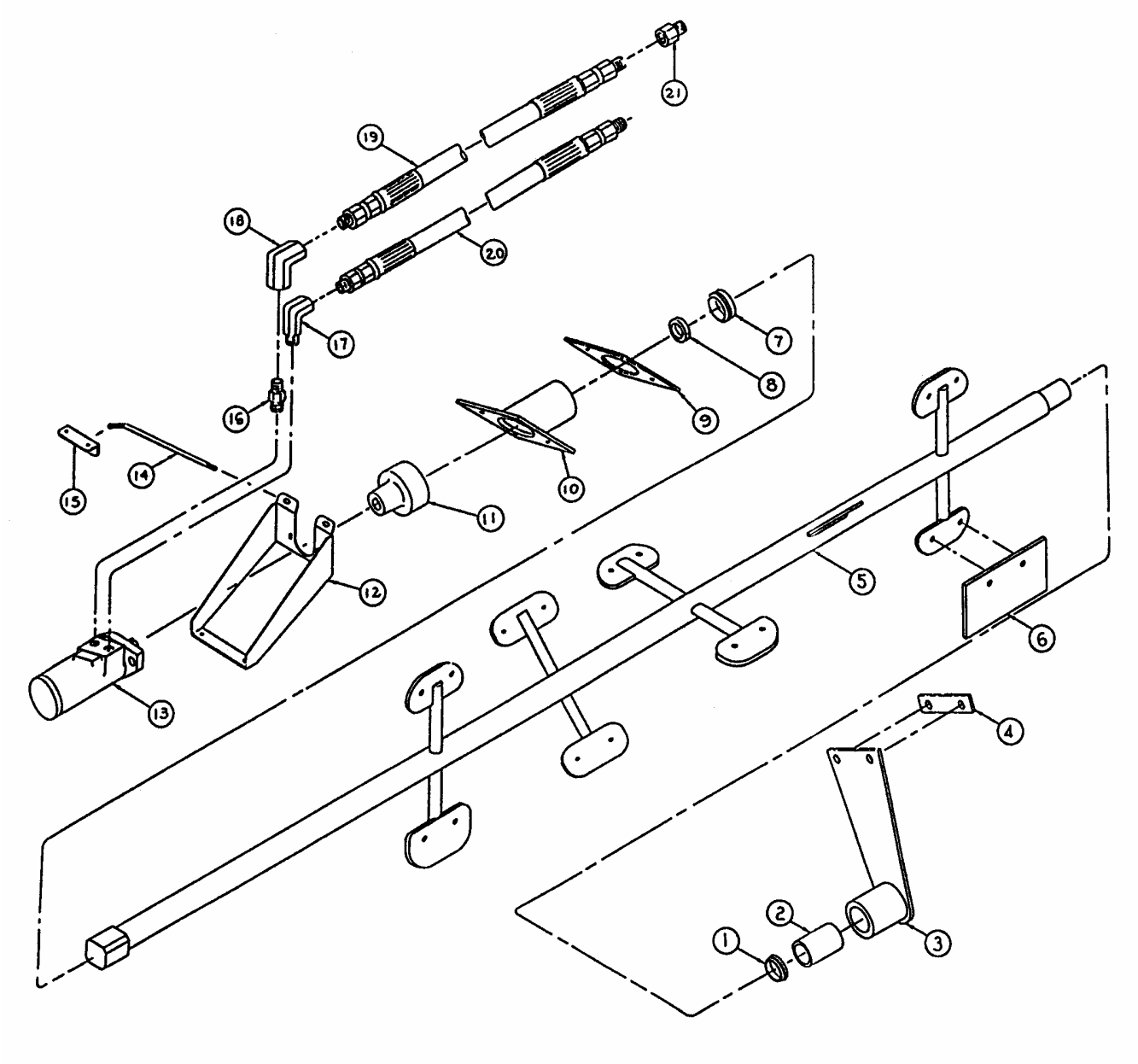
5.5200 AUTOMATIC LUBE SYSTEM

Ref. No.	Part Number	No. Req.	Description
1	41466-01-9	16	ELBOW - .187 Tube x .125 NPT Male
2	41553-01-9	Req.	TUBING, NYLON - .187 OD - Per Foot (Not Shown)
3	41464-02-9	16	ADAPTER - .187 Tube x .125 BSP Male
4	41552-01-9	2	DISTRIBUTOR - 3 Bank - For 12 Roller Units
4	41455-01-9	2	DISTRIBUTOR - 4 Bank - For 16 Roller Units
	48137-01-5	2	Screw, Machine, Truss Sltd. Hd., .25-20 x .50, LW and N
5	41461-02-9	2	ADAPTER - .125 NPT Female x .125 BSP Male
6	40728-01-9	2	TEE - .125 x .125 Female x .125 Female
7	41714-01-1	2	ZERK - .125 - 45°
8	41462-01-9	5	ADAPTER - .312 Tube x .125 NPT
9	43411-02-9	1	PUMP – Grease Bijur Surematic
	48019-01-5	4	Cap Screw, .31-18 x 1.00, LW and N
10	41458-01-9	1	BANJO ASSY. - .312 Tube x .25 BSP
11	41047-04-9	3	ELBOW – Flrl 90° .31T x .25 MPT
12	41456-01-9	1	VALVE - Solenoid
	41966-01-9	1	PARTS GROUP - Solenoid
13	40335-01-1	3	ELBOW - Street - .125 NPT - 90°
14	40503-02-9	2	NUT - Lock - #SL-1 Elec Cond w/Seal
15	41028-01-1	1	NIPPLE - Pipe - .50 x 2.00
16	40503-01-9	1	NUT – Lock .50
17	41967-01-9	1	CONTROLLER - Grease Includes 41967-02-9 Timer
	48108-01-5	4	Cap Screw, .31-18 x .75, LW and N
	41967-02-9	1	TIMER - Module
18	41464-01-9	1	ADAPTER - .312 Tube x .25 BSP
19	41551-02-9	1	INJECTOR - Double - 0.6 - For 12 Roller Units
19	41454-02-9	1	INJECTOR - Double - 0.8 - For 16 Roller Units
20	59186-01-9	1	ENCLOSURE – Auto Lube Includes 38645-01-5 Backplate
21	41527-01-9	1	AIR SET - .125 Schrader
	40860-01-1	1	BUSHING - Pipe - .25 x .12 NPT
22	41527-02-9	1	BRACKET - Air Set Mounting
	48146-01-5	2	Screw, Machine, Rd. Hd. Sltd., 10-32 x .50, LW and N
23	41474-01-9	2	WASHER – Seal
24	41470-01-9	1	PLUG – Pipe .25 BSP
25	43247-01-9	20	TY-RAP – 3.62 Lg
26	38646-01-5	1	TUBING – Air/Grease
27	38646-02-5	1	TUBING – Air/Grease
28	38646-03-5	1	TUBING – Air/Grease
29	40433-01-1	1	ELBOW – Pipe 90° x .25 Blk
30	47211-01-5	40	TUBING - .312 OD - Per Foot (Not Shown)

LW - Lock Washer, N - Nut

NOTE: Machine is equipped with either reference no. four (4) or no. nineteen (19).

5.6100 TUMBLING UNIT - HYDRAULIC

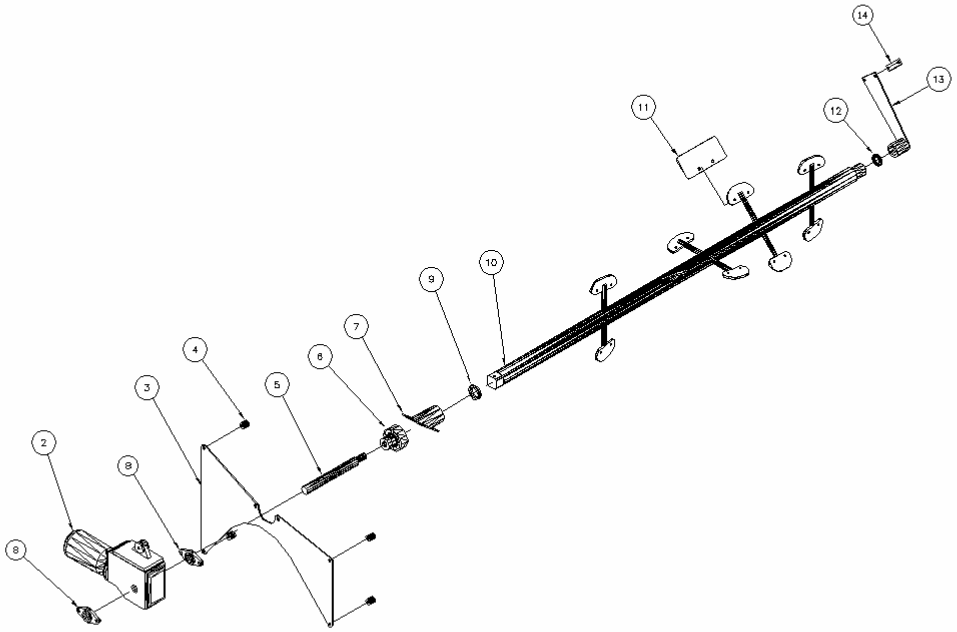


5.6100 TUMBLING UNIT - HYDRAULIC

Ref. No.	Part Number	No. Req.	Description
1	41419-01-9	2	SEAL - V Ring - Paddle Shaft - Rear - 1.42 ID
2	42131-02-9	2	BEARING - Sleeve - 1.50 ID x 1.75 OD x 2.50 Long
3	29829-01-5	2	SUPPORT - Paddle Shaft, Rear - Includes 42131-02-9 Brg
	48022-01-5	4	Cap Screw, .31-18 x 1.75, LW and N
4	35072-01-5	2	SPACER - Shaft Support
5	22485-01-5	2	PADDLE SHAFT - 5 Paddle
6	42813-01-9	20	PADDLE
	48232-01-5	40	Screw, Sltd Truss Hd, .38-16 x .75
7	41383-02-9	2	SEAL - V-Ring - Paddle Shaft - Front - 1.77 ID
8	35953-01-9	2	GROMMET - Paddle Shaft Seal
10	59072-01-9	2	GUIDE - Inlet Chute
11	40236-01-9	2	COUPLER - Motor To Roller - 1.00 Bore
	48171-01-1	2	Set Screw, Soc Hd, 3/8-16 x .50
12	21707-01-5	2	MOUNT - Hydraulic Motor
	48055-01-5	8	Cap Screw, .38-16 x 3.00, W, LW and N
13	41315-01-9	2	MOTOR - Hydraulic - Tumbling Unit Drive
	41315-01-9-100	AR	SEAL KIT - Hydraulic Motor
	48220-01-5	4	Cap Screw, .50-13 x 1.50, W, LW and N
14	33994-06-5	2	ROD - Mounting - Threaded - 3/4-10, W and N
15	34960-01-5	2	BRACKET - Rod Mount
	48055-01-5	8	Cap Screw, .38-16 x 3.00, W, LW and N
16	41034-01-1	2	NIPPLE - Close - .50 NPT
17	41048-01-1	2	ELBOW - Pipe - Street - .50 NPT - 90°
18	41068-01-1	2	ELBOW - Pipe - .50 NPT - 90°
19	29345-54-9	2	HOSE - Hyd - Pressure Manifold To Motor - .50 x 49.88 Long
20	29345-20-9	2	HOSE - Hyd - Motor To Return Manifold - .50 x 44.88 Long
21	41122-01-1	2	ADAPTER - .50 Female NPT x No. 8 - On Valve Manifold

W-Washer, LW - Lock Washer, N-Nut

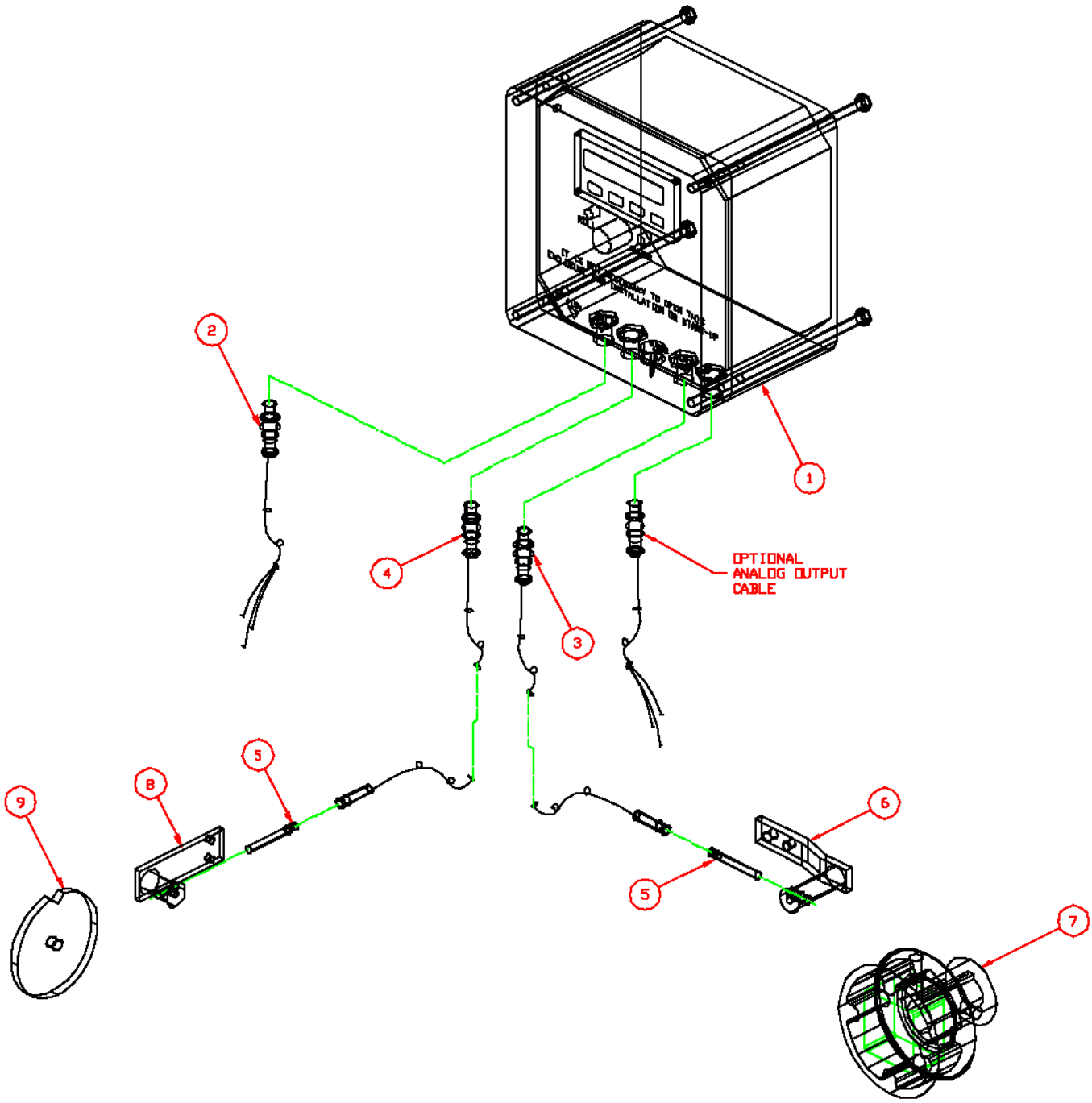
5.6200 TUMBLING UNIT - MECHANICAL



5.6200 TUMBLING UNIT - MECHANICAL

Ref. No.	Part Number	No. Req.	Description
1	29630-02-5	1	TUMBLING UNIT ASSEMBLY
2	43266-04-9	2	GEARMOTOR - 1.00 HP
3	38472-01-5	2	MOUNT - Bearing
4	38474-02-5	8	SPACER - Bearing Mount 4.88
5	38473-02-5	2	SHAFT - Drive
6	40236-01-9	2	COUPLER, Urethene 1.00 (w/Set Screws)
7	59072-01-9	2	GUIDE - Inlet Chute
8	43268-01-9	4	BEARING - Ball Flg 2 Blt 1.38
9	41383-02-9	2	SEAL - V-Ring
10	22485-01-5	2	SHAFT WLDMT - 5 Paddle
11	42813-01-9	20	PADDLE
12	41419-01-9	2	SEAL - V-Ring 1.42 ID
13	29829-01-5	2	SUPPORT - w/Bearing
14	35072-01-5	2	SPACER - .50 x 1.25 x 4.00

5.7000 TACHOMETER SYSTEM



5.7000 TACHOMETER SYSTEM

Ref. No	Part Number	No. Req.	Description
1	43447-02-9	1	TACHOMETER BOX - Complete w/Tach & Connectors
2	43451-01-9	1	POWER CABLE, AC - Tach Box
3	43448-01-9	1	SENSOR CABLE - Rolls
4	43449-01-9	1	SENSOR CABLE - Auger
5	43450-01-9	2	PROXIMITY SENSOR - Inductive
6	24821-01-5	1	SENSOR HOLDER - Roller
7	59219-01-9	1	COUPLER ASSEMBLY - Sensor Pickup
	48171-01-5	1	Set Screw - .38 x .50 Soc Hd
8	24819-01-5	1	SENSOR HOLDER - Hydraulic Auger
9	38683-01-5	1	GEAR - Pickup - For Auger

6.1000 SPARE PARTS - HYDRAULIC MOTOR DRIVE

Part Number	Est. Qty. Per Year *Standard	**Heavy Duty	Description
20779-01-5	2	4	SHAFT ASSEMBLY - Peeling Roller
20249-01-1	2	4	NUT - Peeling Roller Shaft
42089-01-9	1	2	FILTER ELEMENT - Hydraulic
40316-01-9	4	8	BEARING - Peeling Roller - Rear - Includes 2 - 41383-01-9 Seals
41383-01-9	8	16	SEAL - V Ring - Peeling Roller Bearing
40236-01-9	4	8	COUPLING - Drive Motor to Peeling Roller - 1.00 Bore
48171-01-1	4	8	SET SCREW - Soc. Hd. - .38-16 x .50
41613-01-9	1	1	COUPLER - Electric Motor To Hydraulic Pump
40973-01-9	2	4	HYDRAULIC MOTOR - Roller Drive - 4.2 cu. in.
40973-03-9	2	4	HYDRAULIC MOTOR - Roller Drive - 3.6 cu. in. Serial No. M28**-100188 and after
42079-02-9	-	1	PUMP - Hydraulic
42077-01-9	-	1	SIGHT GAUGE
42078-01-9	-	1	FLOAT SWITCH
42082-01-9	-	1	PRESSURE GAUGE
42130-02-9	1	2	SOLENOID - Water - .75" NPT
42127-02-9	-	1	TEMPERATURE SWITCH
41216-02-9	-	1	HEAT EXCHANGER
41958-02-9	-	1	VALVE - Flow Control - Roller Speed
41315-01-9	1	1	HYDRAULIC MOTOR - Auger Drive - 23.8 cu. in. To Serial No. M28**-123190
41621-01-9	1	1	HYDRAULIC MOTOR - Auger Drive - 6.2 cu. in. Serial No. M28**-010191 and after
40093-01-9	-	2	BEARING - Discharge Auger
41958-01-9	-	1	VALVE - Flow Control - Auger Speed
43448-01-9	1	1	SENSOR CABLE - Rolls
43449-01-9	1	1	SENSOR CABLE - Auger
43450-01-9	1	1	PROXIMITY SENSOR - Inductive
Option: Autolube Units - Add			
41456-01-9	1	1	VALVE - Solenoid
41527-01-9	1	1	AIR SET
41551-02-9	1	1	INJECTOR - Double - 0.6 - For 12 Roll Units
41454-02-9	1	1	INJECTOR - Double - 0.8 - For 16 Roll Units
41552-01-9	1	1	DISTRIBUTOR - 3 Bank - For 12 Roll Units
41455-01-9	1	1	DISTRIBUTOR - 4 Bank - For 16 Roll Units
41553-01-9	16	16	TUBING - .187 OD - Per Foot
Option: Intermittent Line Operation - Add			
41751-01-9	-	1	VALVE - Solenoid

*Standard quantities are estimated based on production schedule of eight (8) hours a day, five days a week for (1) year under normal operating conditions.

**Heavy duty quantities are estimated based on production schedule of twenty-four (24) hours a day, five days a week for one (1) year under normal operating conditions.

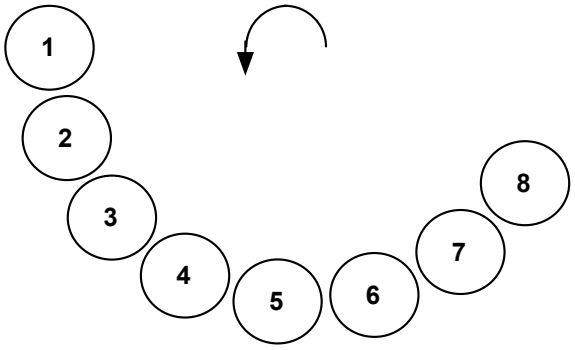
6.2000 SPARE PARTS - MECHANICAL

Part Number	Est. Qty. Per Year *Standard	**Heavy Duty	Description
20779-01-5	2	4	SHAFT ASSEMBLY - Peeling Roller
20249-01-1	2	4	NUT - Peeling Roller Shaft
40316-01-9	8	16	BEARING - Peeling Roller - Rear and Drive Case Shaft - Includes 2 - 41383-01-9 Seals
41383-01-9	16	32	SEAL - V Ring - Peeling Roller Rear Bearing
40236-01-9	4	8	COUPLING - Drive Shaft to Peeling Roller - 1.00 Bore
48171-01-1	4	8	SET SCREW - Soc. Hd. - .38-16 x .50
40319-01-9	6	12	PULLEY - Timing - Drive Case
48168-01-1	12	24	SET SCREW - Nylock - .312-18 x 1 - Timing Pulley
40320-01-9	8	12	BELT - Timing - Drive Case - 24 OC
41367-08-9	2	4	BELT - Drive

*Standard quantities are estimated based on production schedule of eight (8) hours a day, five (5) days a week for one (1) year under normal operating conditions.

**Heavy duty quantities are estimated based on production schedule of twenty-four (24) hours a day, five (5) days a week for one (1) year under normal operating conditions.

7.1000 PEELING ROLL CONFIGURATION



DISCHARGE END VIEW

ROLL NO.	PART NO.	ROLL TYPE
1.		
2.		
3.		
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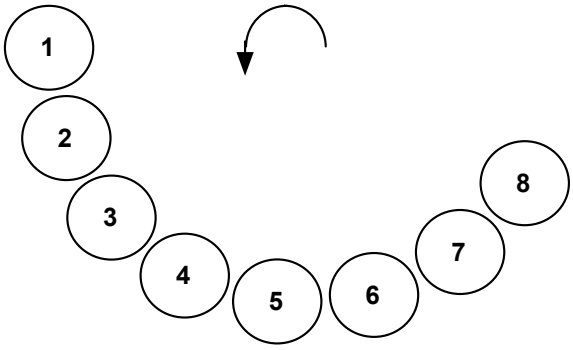

DISCHARGE END VIEW

ROLL NO.	PART NO.	ROLL TYPE
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2.		
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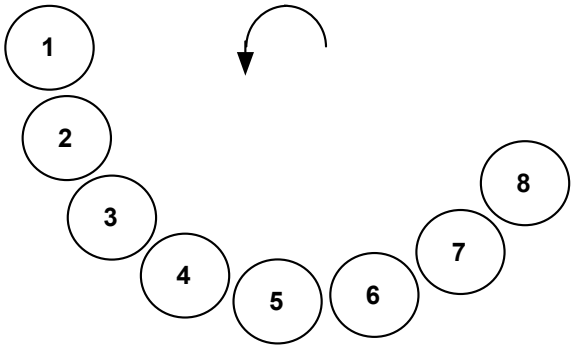
7.1000 PEELING ROLL CONFIGURATION



DISCHARGE END VIEW

ROLL NO.	PART NO.	ROLL TYPE
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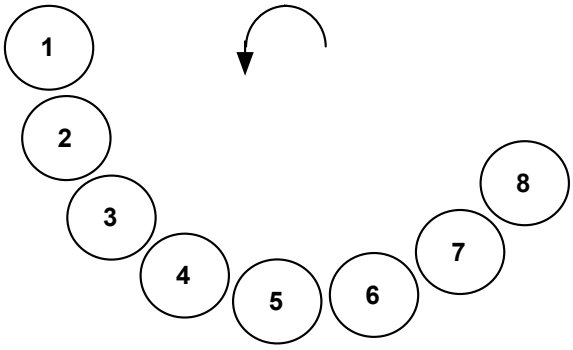


DISCHARGE END VIEW

ROLL NO.	PART NO.	ROLL TYPE
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8		

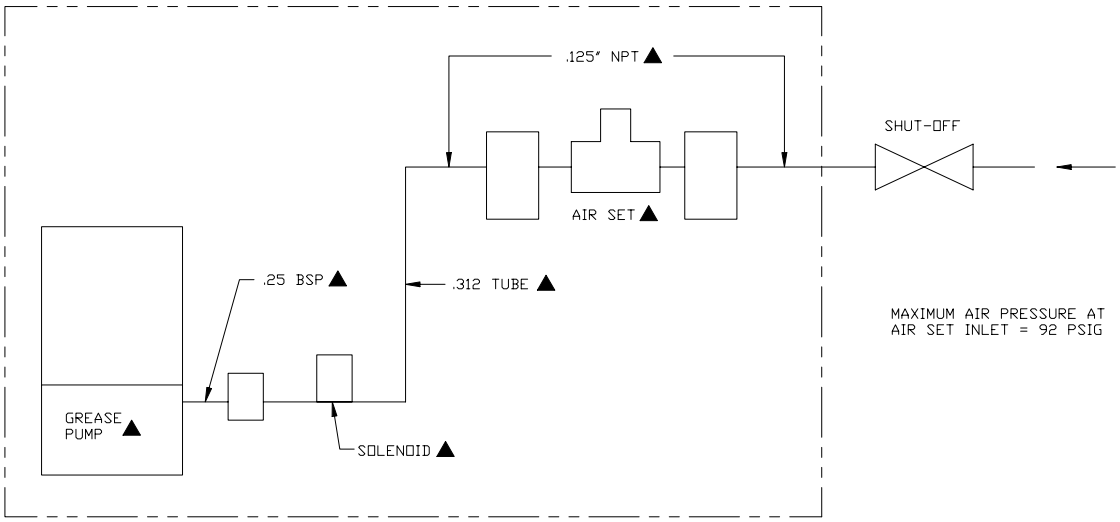
7.2000 MACHINE SETTINGS

Date	Product Variety	Harvest Date	Storage Time	Roller Configuration	Auger Setting	Drive Speed Setting	Tumbling Unit Speed Setting

7.2000 MACHINE SETTINGS

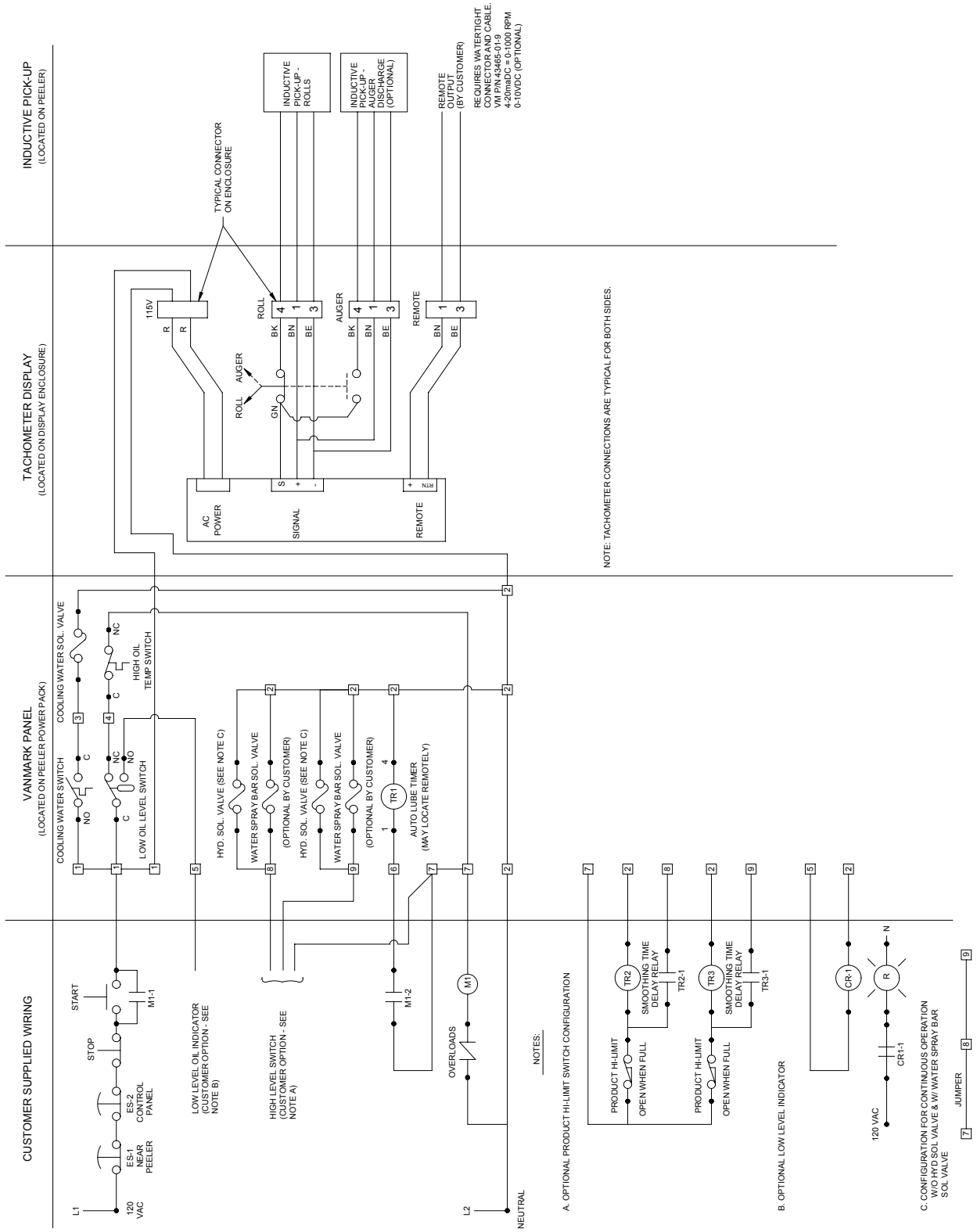
Date	Product Variety	Harvest Date	Storage Time	Roller Configuration	Auger Setting	Drive Speed Setting	Tumbling Unit Speed Setting

7.3100 AIR - AUTOMATIC LUBE

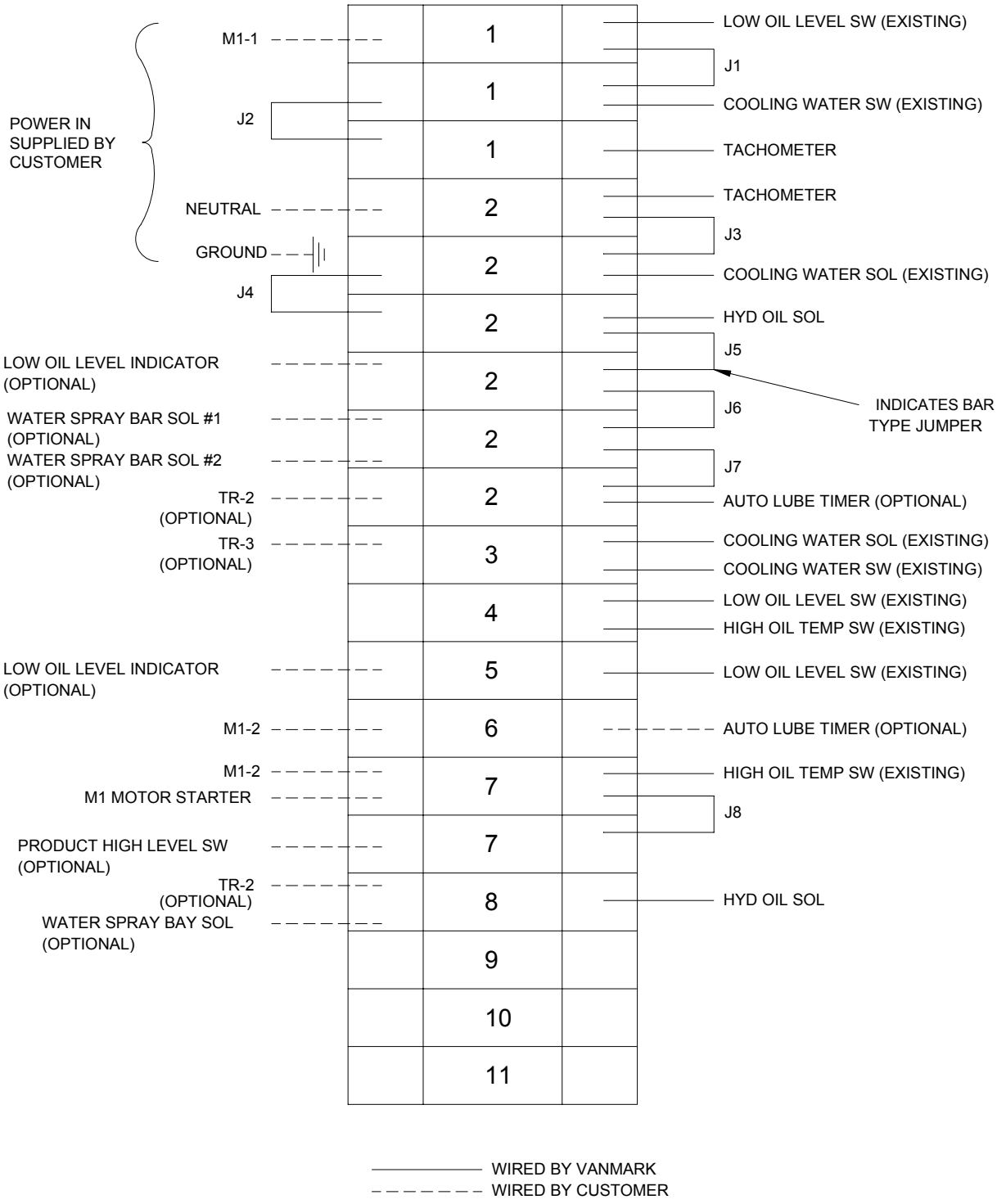


NOTE: ▲ INDICATES ITEMS SUPPLIED BY VANMARK

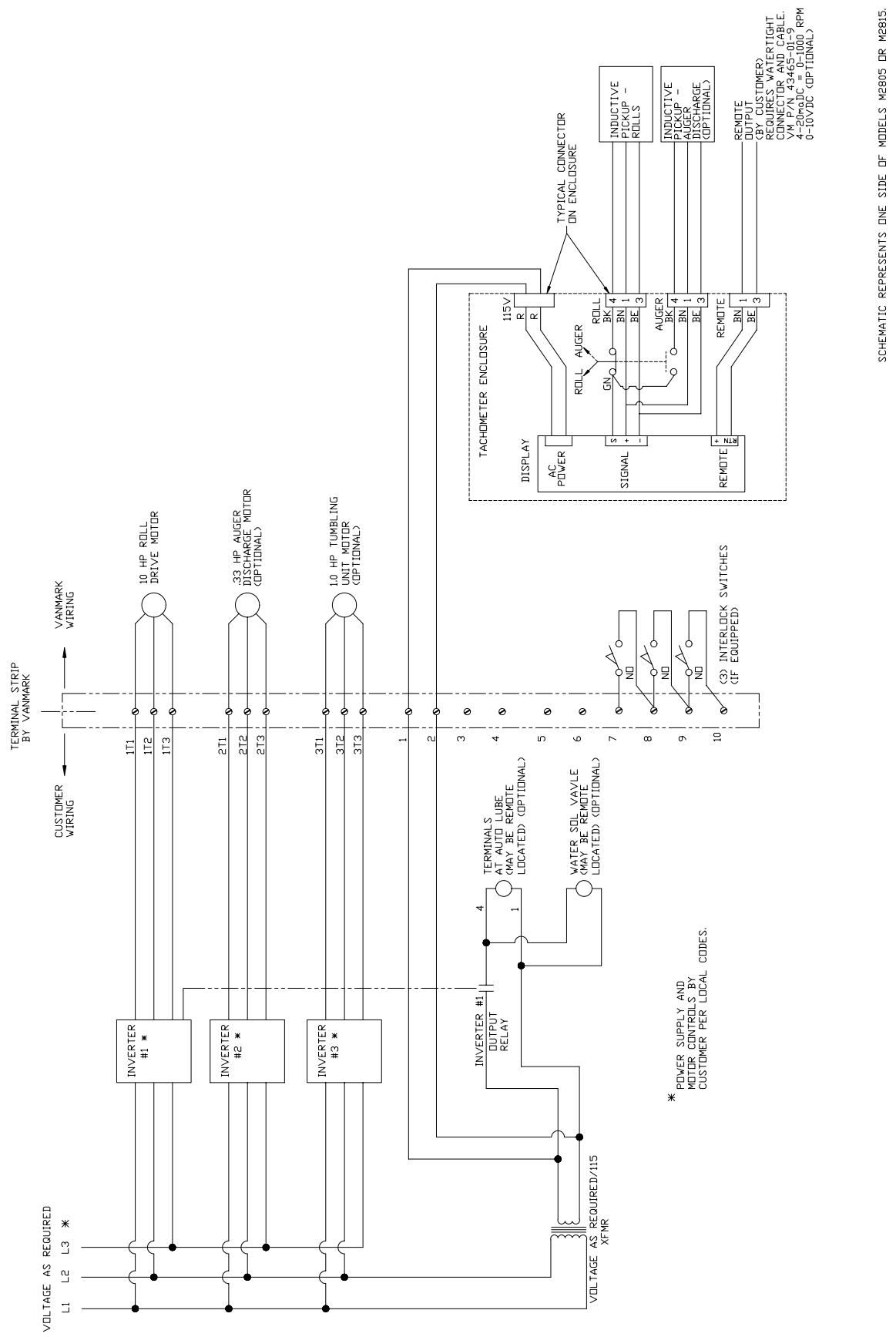
7.4100 RECOMMENDED WIRING - HYD DRIVE



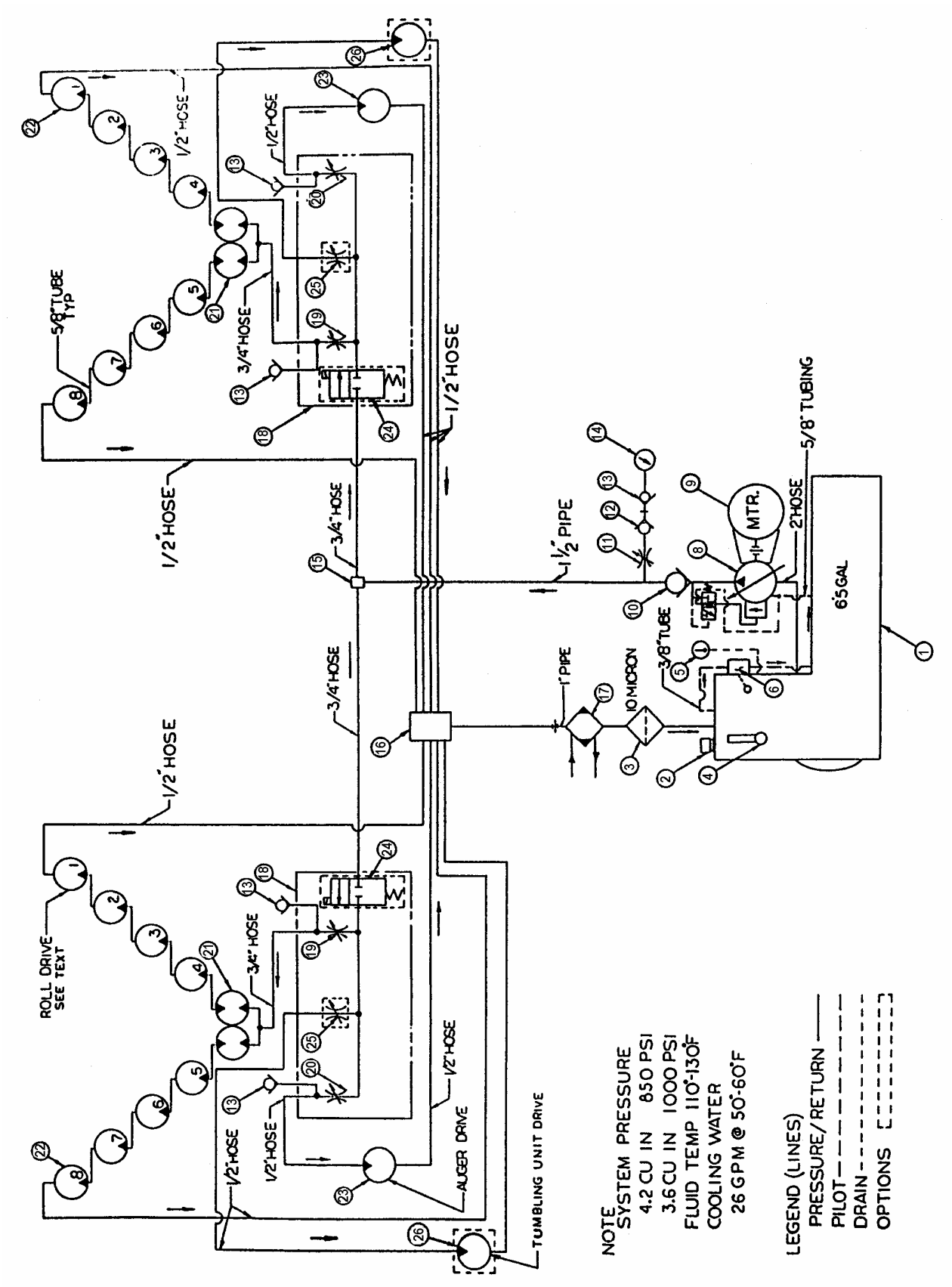
7.4200 WIRING-PEELER JUNCTION BOX



7.4300 RECOMMENDED WIRING – INVERTER CONTROLLED DRIVE



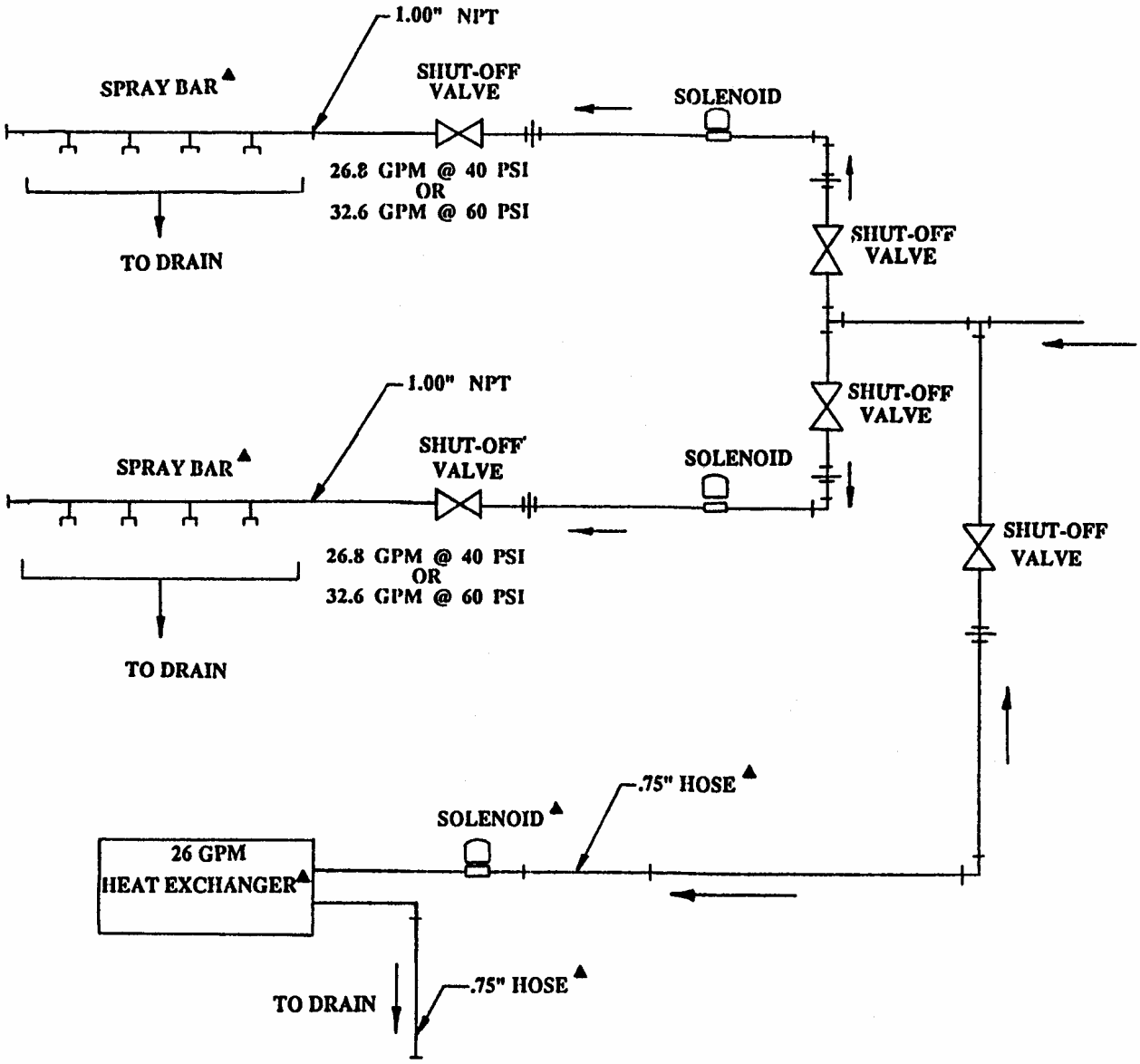
7.5100 MULTI MOTOR HYDRAULIC W/OPTIONS



7.5100 MULTI MOTOR HYDRAULIC W/OPTIONS

Ref. No.	Part Number	No. Req.	Description
1	42076-02-1	1	RESERVOIR - 65 Gallon
2	41623-01-9	1	FILLER BREATHER
3	42086-01-9	1	FILTER ASSEMBLY - Includes 42089-01-9 Filter Element
4	42077-01-9	1	SIGHT GAUGE - Fluid Level and Temperature
5	42127-01-9	1	TEMPERATURE SWITCH
6	42078-01-9	1	FLOAT SWITCH
8	42079-02-9	1	PUMP - Pressure Compensated
9	41726-01-9	1	ELECTRIC MOTOR - 25 HP To Serial No. M28** - 033192
9	42977-01-9	1	ELECTRIC MOTOR - 30 HP Serial No. M28** - 040192 and after
10	42081-02-9	1	CHECK VALVE
11	42083-01-9	1	SNUBBER - .25 NPT
12	42084-01-9	AR	PRESSURE TAP - .12 NPT
13	42085-01-9	AR	TAP/GAUGE ADAPTER
14	42082-01-9	1	PRESSURE GAUGE - .25 NPT
15	34162-01-9	1	MANIFOLD - Pressure - 1.50 NPT
16	36438-01-9	1	MANIFOLD - Return - 1.50 NPT
17	41216-01-9	1	HEAT EXCHANGER, Water Cooled (MS)
18	41956-01-9	2	MANIFOLD ASSEMBLY - Flow Control Rolls and Auger Dischg
19	41958-02-9	2	VALVE - Flow Control - Rolls (Included in 41956-01-9)
20	41958-01-9	AR	VALVE - Flow Control - Auger Dischg and Tumbling Unit
21	41214-02-9	2	FLOW DIVIDER - Mdl P27 To Serial No. M28**-123190
21	41214-01-9	2	FLOW DIVIDER - Mdl P23 Serial No. M28**-010191 and after
22	40973-01-9	12 or 16	MOTOR - Hydraulic - Roll Drive - 4.2 cu in To Serial No. M28**-093088
22	40973-03-9	12 or 16	MOTOR - Hydraulic Roll Drive - 3.6 cu in Serial No. M28**-100188 and after
23	41315-01-9-RAL	2	MOTOR - Hydraulic - Auger Dischg - 23.8 cu in To Serial No. M28**123190
23	41621-01-9	2	MOTOR - Hydraulic - Auger Dischg - 6.2 cu in Serial No. M28**-010191 and after
24	41751-01-9	2	VALVE - Solenoid (For Intermittent Operation) (Optional)
25	42154-01-9	2	MANIFOLD ASSEMBLY - Tumbling Unit (Optional)
26	41315-01-9	2	MOTOR - Hydraulic - Tumbling Unit (Optional)

7.6100 WATER - SPRAY BAR AND HEAT EXCHANGER



NOTE: ▲ INDICATES ITEMS SUPPLIED BY VANMARK

PURCHASER TO SIZE WATER LINES FOR FLOW AS NOTED.

9.1000 WARRANTY

LIMITED WARRANTY AND LIMITATION OF REMEDIES

Vanmark Corporation ("Vanmark") warrants Vanmark equipment components of its own manufacture to be free from defects in material and workmanship under normal use and service by the Purchaser for a period of six months from the date of shipment by Vanmark to Purchaser. Vanmark equipment components which are manufactured by Vanmark's suppliers are not covered by this Vanmark six month limited warranty; the only warranties applicable to components manufactured by Vanmark suppliers are the warranties, if any, provided by the applicable Vanmark supplier to Vanmark's customers. Vanmark may require the Purchaser to return to Vanmark any equipment or part, at Purchaser's expense, for which there is a claim of breach of warranty. Vanmark shall not be liable for any breach of warranty in the event Purchaser fails to provide within its discovery of any claimed defect, or in the event Purchaser or its agents and employees make any alteration of the equipment that is not specifically authorized by Vanmark; subject the equipment to extreme climate conditions; abuse or misuse the equipment; fail to use proper care in the installation, operation and/or maintenance of the equipment contrary to the installation, operating and maintenance instructions furnished by Vanmark to Purchaser. **THE VANMARK SIX MONTH LIMITED WARRANTY DESCRIBED IN THIS PARAGRAPH IS IN LIEU OF ANY OTHER VANMARK WARRANTY. VANMARK MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

THE SOLE AND EXCLUSIVE REMEDY for any breach of the Vanmark six month limited warranty shall be the repair or replacement for Purchaser, at Vanmark's option and expense, of any equipment component or part manufactured by Vanmark which proves to be in breach of the Vanmark six month limited warranty. Any repaired or replaced equipment component or part shall be provided F.O.B. Vanmark's factory. **VANMARK SHALL UNDER NO CIRCUMSTANCES BE LIABLE TO ANY PERSON FOR INCIDENTAL, CONSEQUENTIAL OR OTHER INDIRECT DAMAGES OF ANY KIND.**

This limited warranty and limitation of remedies gives you specific legal rights, and you may also have other rights which vary from state to state.